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Motivated Risk Assessments

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Abstract

How do people assess risks associated with a hedonic but dangerous activity? I conduct a longitudinal field experiment (N=434) exploiting the conditions of the COVID-19 pandemic to investigate whether monetary incentives induce people to motivate their risk assessments. Each participant receives a café voucher with a random value: treated participants receive a 10EUR voucher, and the control group a 1.50EUR voucher. The results show that subjects who receive a high incentive not only visit cafés more often but also reduce their risk assessment relative to subjects with a low incentive. Importantly, the assessment updating happens in anticipation of the visit, suggesting that it justifies a risky activity. This finding is inconsistent with the standard notion of Bayesian updating but consistent with motivated reasoning. It is robust to different risk measures (incentivized and non-incentivized) and does not lend support for alternative explanations, such as visits at less busy times or additional information acquisition. The data further suggests that the formation of motivated risk assessments is supported by selective recall of previous assessments. Treated subjects systematically underestimate former assessments relative to subejects in the control group.

JEL codes: C93, D03, D91

Keywords: Risk Assessment; Motivated Reasoning; Self-Deception; Field Experiment

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1 Introduction

Many activities from which people derive pleasure also entail a risk because they are inherently dangerous both for oneself and for others. For example, consider the cases of smoking or fast driving. While it is clear that both activities carry substantial health risks, we still lack knowledge about the factors that shape people's risk assessments relating to such perilous activities. Recent research in economics (e.g., Engelmann et al., 2019; Oster et al., 2013) suggests that the formation of beliefs and assessments is not exclusively driven by facts or information but often motivated by desires or anxieties – a psychological phenomenon called motivated reasoning (Kunda, 1990). It describes the subconscious interplay of motivation and cognition during a thought process, which eventually leads to emotionally biased decisions. In this paper, I introduce the term "motivated risk assessment" to capture the phenomenon where such biased reasoning affects a risk assessment. Since assessments are subjective by nature, they seem well suited to serve as means for self-deception to produce a justification to engage in risky activities. From a public health perspective, however, an increase in risky activities as a result of motivated risk assessments is problematic.

In spite of the importance of risk assessments and the actions which they underlie, relatively little is known about whether and to what extent subjective risk assessments can be motivated by desires or "wishfull thinking". To date, the prevalent notion in the economic literature is that the formation of subjective risk assessments is guided by a desire for accuracy and that its updating is consistent with Bayes Rule (see e.g., Lundborg & Andersson, 2008; Lundborg & Lindgren, 2002; Zafar, 2011). It implies that individuals can be granted relatively much self-responsibility as long as it is accompanied with a dissemination of credible information about the source of the hazard. However, if the formation of risk assessments is indeed in part an outcome of wishfull thinking, then we should expect the assessments to be more volatile and dependent on the incentives provided by the environment. For the benefit of a momentary utility gain, motivated risk assessments could jeopardize a person's long-term well-being or that of others because they could engender changes in beliefs about the dangers of risky activities. To understand the context and extent of risky behavior and to ultimately design policies that allow for an appropriate extent of self-responsibility, it is therefore important to carefully investigate the impact of motivated reasoning on the assessment of risks and dangers.

In this paper, I study whether people self-servingly bias their risk assessments by analyzing how young adults update their perceptions provided an incentive to engage in a hedonic but (somewhat) risky activity. Using the changed environmental conditions of the COVID-19 pandemic, which make it more dangerous to perform physical social activities, I conduct a pre-registered field experiment where students are incentivized to visit a local café. Each participant is assigned to one of two treatment groups: In the LowIncentive treatment, which serves as my control treatment, participants receive a gift card with a value of 1.50EUR (15SEK); in the HighIncentive treatment participants receive a 10EUR (100SEK) gift card. I incentivize both the control and the treatment group to avoid that potential signals or information, which could be inferred from the fact that the gift card is distributed by a public institution, affect the two groups asymmet-

rically. My goal is to test the main hypothesis that subjects who receive the 10EUR incentive will perceive the danger of COVID-19 associated with a café visit as smaller than subjects who receive a 1.50EUR incentive. To elicit each participant's perceived risk associated with a café visit, I conduct multiple surveys. The first survey (henceforth Baseline survey) is conducted prior to the announcement of the gift card incentive, in order to obtain an unbiased risk assessment. An additional mini survey (henceforth Interim survey) is conducted after the introduction of the gift card but just prior to its redemption. Note that only participants who decided to use their gift card participated in that Interim survey. The last survey (henceforth Endline survey) is conducted exactly 15 days after the Baseline survey and after the expiration of the gift card. That is, all subjects participated in the Endline survey and if a subject used her gift card, the risk assessment elicited in the Endline survey reflects her assessment after the café visit.

To study if subjects motivate their risk assessments and divert from the standard assumption of Bayesian belief updating, my identification strategy relies on three key steps: First, I compare if subjects in the HighIncentive treatment visit cafés more often than subjects in the LowIncentive treatment. Second, I conduct between-subject comparisons of risk assessments elicited during the Baseline and Endline survey. This allows me to understand the dynamics evoked by the two different incentives. If people motivate their risk assessment in response to an incentive, we would expect that subejects in the HighIncentive treatment perceive a reduction in risk between the two surveys relative to subejects in the LowIncentive treatment. Third, I need to identify the timing of this reduction in perceived risk by means of a within-subject comparison for risk elicited at the Interim and Endline survey. This is important to understand if the updating of an assessment takes place in anticipation of the incentivized behavior or as a result of it. If people are Bayesian, they should update their risk assessments after the gift card redemption, in response to the experience of the café visit. However, if they motivate their risk assessment to justify risky behavior, the updating should happen in anticipation of the visit and thus prior to it.

The results of my experiment suggest that many participants motivate their risk assessment for a café visit, that is, the risk to contract COVID-19 through a café visit, and jeopardize oneself and others. I find that subejects in the HighIncentive treatment visit cafés significantly more often than subejects in the LowIncentive treatment. Moreover, while subjects with a 1.50EUR incentive perceive that the danger associated with a café visit increases over the duration of the study, which is consistent with the general increase in new COVID-19 infections in the study period, subjects with a 10EUR incentive perceive a drop in risk. For most of the participants, this drop in risk perceptions happens prior to the café visit as identified through my Interim survey. It implies that the updating is a direct result of the gift card incentive but not of the experience of the café visit. Had the updating been consistent with Bayesian theory, the timing and/or the updating direction would have been different. Instead, the finding suggests that the updating served to justify a potentially risky activity. It is robust to alternative indicators of perceived risk (non-incentivized and incentivized) and cannot be explained by endogenous behavior changes such as café visits at less busy times. The survey data also allows me to exclude the possible explanation that subjects who visited a café

collected additional information prior to the café visit. Participants of the HighIncentive treatment do not consume more news, do not communicate more with other study participants and do not collect more information about COVID-19 related risks. The results thus seem to support the notion that the updating of risk assessments is motivated.

Digging deeper into the survey data helps to shed light on the nuances of motivated risk assessments as well as its underlying mechanisms. I distinguish between two components of risk: Risk perceived for oneself and risk imposed on others; and find that it is the risk imposed on others that is mainly affected by the incentive and subject to motivated updating. As it is construed more abstractly and more difficult to determine than risk for oneself, it provides the necessary "wiggle room" for a self-serving updating bias. Moreover, my data reveals that subjects who motivate their risk assessments (i.e. subejects in the HighIncentive treatment) conveniently underestimate their risk priors relative to those who have no incentive to engage in motivated reasoning (i.e. subejects in the LowIncentive treatment). They pretend (or believe) they always assessed the risk as sufficiently low to justify a café visit, when in fact they acknowledged earlier that the risk was higher. This mechanism of conveniently biased recall has previously been shown to be effective in averting ego-threats, for people to maintain a level of overconfidence (Zimmermann, 2020). In the context of risk assessments, however, it serves a different purpose. It reduces the cost of a cognitive dissonance between hedonic desires and obstructive past beliefs and makes it easier for an individual to give in to an incentive.[1] Lastly, I show that one potential driver for motivated risk assessments in the context of café visits are pro-social preferences. While for subjects high in altruism the main treatment effect - motivated risk assessments - is large and statistically significant, for subjects low in altruism it remains small and non-significant. Although pro-social subjects initially deem café visits as more dangerous than less pro-social subjects, provided with a gift card incentive, they are more likely to use that gift card to eat inside the café. Since café visits are social activities, pro-social people most likely suffer the most from restrictions and recommendations not to visit cafés and the costs to resist a tempting gift card are higher than for egoistic people.

In addition to the incentive treatment, my experiment includes an Information treatment that runs orthogonal to the gift card incentive. Subjects assigned to that treatment are truthfully informed about long-term health effects of COVID-19 and about how the behavior of young adults during the pandemic jeopardizes older generations. The treatment allows me to explore whether information about the source of the danger can reduce the propensity to motivate risk assessments. Moreover, it enables me to study the direct effect of information on perceptions and on the propensity to visit a café. The provision of information about the source of the danger (i.e. about COVID-19) appears to increase the perceived risk related to café visits. However, it does not seem effective in counteracting the force of the gift card incentive. I do not find

[1] The concept of cognitive dissonance is a social psychological concept. It describes a tension between different cognitive elements such as perceptions, beliefs, desires, attitudes or values. Since such a tension can trigger emotional discomfort, people strive to resolve the dissonance and reach a state of consonance (Festinger, 1957, 1962). Today, the concept has found general approval in the discipline of economics (see e.g. Akerlof & Dickens, 1982; Gilad et al., 1987; Konow, 2000; Rabin, 1994). In particular for the literature on motivated reasoning the concept has been influential because a motivated distortion of cognitive elements can arise in the service of resolving of a dissonance (Epley & Gilovich, 2016).

evidence that subjects who are assigned to the INFORMATION treatment are less likely to motivate their risk assessments or visit cafés.

My study makes three important contributions: First, it contributes both thematically and methodically to the large strand of literature on motivated reasoning (for an overview see Epley & Gilovich, 2016). To date, motivated reasoning has primarily been studied in the context of overconfidence (Heidhues et al., 2018; Huffman et al., 2019; Schwardmann & Van der Weele, 2019), moral behavior (Carlson et al., 2020; Di Tella et al., 2015; Exley, 2016; Konow, 2000; Saucet & Villeval, 2019) or in relation to the phenomenon of confirmation bias (Barrera et al., 2020; Charness & Dave, 2017; Charness et al., 2021; Schwardmann et al., 2019). This paper adds to this literature by providing insights on the motivated assessment of health risks. It suggests that risk is not necessarily assessed with an intent of precision; in the presence of an incentive, risk can be assessed with a motivation to justify risky behavior. Thematically, this paper most closely connects with work, which shows that risk resulting from uncertainty can provide the fertile ground for people to form motivated beliefs because it can create the necessary wiggle room (Exley, 2016; Gneezy et al., 2020; Haisley & Weber, 2010; Saccardo & Serra-Garcia, 2020). In the situations studied in those papers, uncertainty is deliberately inflated to justify self-serving behavior, which comes at the cost of harming others. In my setup, risk needs to be downplayed to resolve a cognitive dissonance between the hedonic desire to visit a café and the perception that a café visit could be dangerous. That is, risk assessments act as a lever to reduce potential psychological costs. Moreover, the conception of risk in my paper is different. The existing work (e.g. Exley, 2016; Gneezy et al., 2020) studied risk resulting from uncertainty about the realization of a material outcome. I exploit the ambiguity about potential health risk, which comprises not only the risks of contracting the coronavirus but also the uncertainty about its severity conditional on being infected.

With one notable exception by Schwardmann et al. (2019), virtually all evidence on motivated reasoning, self-deception or cognitive dissonance is either theoretical (for examples, see e.g., Akerlof & Dickens, 1982; Bénabou & Tirole, 2002, 2004; Brunnermeier & Parker, 2005; Caplin & Leahy, 2001; Kőszegi, 2010) or stems from lab or online experiments (see e.g., Barrera et al., 2020; Di Tella et al., 2015; Exley & Kessler, 2019; Gneezy et al., 2020). My study complements the literature by providing evidence that demonstrates the importance of motivated reasoning in the field. It generates insights into how beliefs interact with behavior in a natural setting for young adults. It relates to the evidence by Schwardmann et al. (2019) who study self-persuasion during a debating competition and show that people, in an attempt to convince others, tend to deceive themselves by developing a belief of superiority about their own, randomly assigned debating position. My results complement those by Schwardmann et al. (2019), documenting that self-deception can also occur with the purpose to persuade oneself, when past beliefs obstruct current desires. Moreover, my experiment includes a dynamic perspective, adding focus on the updating of risk assessments. The only related study, which also investigates dynamics of motivated beliefs stems from Zimmermann (2020). It builds on evidence from the lab and focuses on how individuals process ego-threatening feedback to maintain a positive self-image.

Second, my work contributes to the literature that investigates the mechanisms of economic incentives (for an overview, see Gneezy et al., 2011). It is well established that, besides a price effect, incentives can have a psychological effect and that both effects may counteract or reinforce each other (e.g. Gneezy & Rustichini, 2000b). A psychological effect of an incentive can unfold in different ways. For example, it can alter a person's image concerns (Ariely et al., 2009), it can affect her norm perception (Gneezy & Rustichini, 2000a) or it can crowd out intrinsic motivation (Meier, 2007). My findings suggests that incentives can have an additional psychological effect. Even without the sending of a signal that would provide information to update on, incentives can alter people's perceptions of risk by changing the motivation to engage in risky behavior.

Third, I contribute to the literature that seeks to explain how people form and update risk assessments. The main focus of that strand has been on the accuracy of risk assessments, that is, to what extent the formation and updating of subjective perceptions follow objective indicators and whether it is compatible with Bayes' rule (see e.g., Loewenstein & Mather, 1990). While in particular early studies by economists argued that an assessment updating generally follows Bayes' rule principles (Viscusi, 1985; Viscusi & O'Connor, 1984), psychologists claimed that it is largely based on heuristics and as such subject to systematic biases (Slovic et al., 1980). In a study that investigates the health risks of smoking in a static setting, Viscusi (1990) argues that both smokers and non-smokers generally overestimate the risk of smoking but under full information would converge to accurate risk assessments. My longitudinal data enables me to track dynamics. It reveals that even in the absence of new or changed information risk assessments are not necessarily temporally consistent. In the presence of an exogenous incentive, subjects who want to engage in a risky activity systematically assess the risk as smaller. My work extends this literature by documenting novel evidence which is inconsistent with the notion of Bayesian belief updating. It shows that biases in risk assessments may not only be a result of heuristics but can also occur when assessments are guided by hopes and desires.

The remainder of the paper is structured as follows: In section 2, I will present the design of my experiment and discuss how it allows to identify if risk assessments are motivated. Section 3 will document my main results. In section 4, I will present evidence about mechanisms and drivers underlying the assessment updating and discuss how risk assessments associated with a café visit affect the assessments related to other activities. Section 5 concludes.

2 Experiment

2.1 Experimental Background: COVID-19 in Sweden

The Swedish approach to the COVID-19 pandemic was different than in most other European countries. Although various public institutions such as universities or libraries were closed temporarily (including the time of this study), the entire gastronomy as well as gyms and private shops remained open. There was

no obligation to wear face masks, neither outdoors nor inside shops or restaurants. People were merely encouraged to keep a distance from one another and to avoid gatherings in larger crowds. Despite comparably high numbers of COVID cases, café or restaurant visits were therefore no unusual activity for many people at the time.

In March 2021, the time when the experiment was conducted, the 7 day average of COVID-19 new infections per 100,000 inhabitants (henceforth: incidence) in Skåne[2], the region where the experiment was conducted, was around 214. By the end of the study, in mid April, the incidence value increased to approximately 300. For comparison, the April incidence in Skåne was lower than the national Swedish incidence (385) but higher than the average incidence of the European Union (221) and the average incidence of the other Nordic countries (61). Figure A1 in the appendix depicts the development of the incidence for the period of the experiment.

Like other countries of the European Union, Sweden started to roll out its vaccination campaign against COVID-19 at the end of December 2020. By the start of my experiment roughly 7.6% of Skåne's population above the age of 18 had received their first vaccination dose. However, due to a prioritization of older people and people working in the health care sector, none of the students who were recruited for this study had received a vaccination.

2.2 Experimental Design

My experiment was conducted in collaboration with a café located in the city center of Lund, a midsize Swedish city. All study participants were offered a gift card for that café, which was valid for 14 days. In return, the café collected data, whenever a gift card was redeemed. This data is matched with responses from three experimental surveys:

1. **Baseline Survey.** Administered at the start of the experiment with all subjects.
2. **Interim Survey.** Administered within 14 days after the Baseline survey and just before the café visit with subjects who redeem their gift card.
3. **Endline Survey.** Administered 15 days after the Baseline survey with all subjects.

To understand how young adults assess the COVID-19 related risk of visiting a café, the main survey questions whose responses will serve as outcome variables are the following:

- **Risk for Self.** If you visited a café or restaurant in Lund today, how worried would you be about your own health? (1 = not at all worried, 7 = very worried)
- **Risk for Others.** If you visited a café or restaurant in Lund today, how worried would you be that you could infect yourself during the visit and then pass the virus on to other people you interact with (e.g. friends, family or colleagues)? (1 = not at all worried, 7 = very worried)

[2]Skåne is one of 25 administrative regions in Sweden and the second largest by population. Its population in 2020 was estimate to be 1,386,530.

- **Total Risk.** Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to visit a café or restaurant? (1 = not at all dangerous, 7 = very dangerous)

Those three questions appeared in all three surveys, which allows me to investigate the dynamics of risk assessments as well as the assessments' updating patterns. Note however, that none of the questions was incentivized. I deliberately chose to leave the main three questions simple and non-incentivized to make them intuitive to answer and to maintain the notion that there exists no objective truth for the risk perceived. Nevertheless, I employed an incentivized survey question in addition to the three non-incentivized questions, which appeared in the Baseline and in the Endline survey:

- **Incentivized Risk Assessment.** What is the percentage share of new infections that is due to café and restaurant visits? (Please state a number between 0 and 100)

I verified the accuracy of the response by comparing it to an estimate provided by Fetzer (2020). To ensure incentive compatibility, I used a quadratic scoring rule and paid two random students (one for the Baseline and one for the Endline survey) at the end of the study. To ensure that participants could not search for the correct answer online, I restricted the response time for that question (and the other three questions on that page) to two minutes.

To study the behavior of young adults in light of the risks of the pandemic, my analysis builds on two other measures. First, I exploit the responses to an additional survey question posed in the Baseline and the Endline survey:

- **Self-Reported Café Visits.** How many times have you visited a café or restaurant during the last two weeks?

The response to that question allows for general inferences about whether young adults visited cafés and restaurants. It captures visits at any café or restaurant over the two weeks prior to the respective survey. Again, since the question is asked twice over the period of 15 days, it allows to study changes in behavior over time. However, because the response to the question is self-reported, it is also subject to noise. To account for that, I also use the data collected at the café I collaborate with. Since many of the subjects visited that café as a result of the gift card incentive, I am able to exploit more nuanced data that is collected with their gift card redemption. In particular, I can study the time at which the café is visited, how busy the café was at that time and whether the students ate inside or outside the café.

In addition to my main survey measures, I elicited a number of additional variables. First, similar to my main questions about a café visit and the risk thereof, I elicited the perceived risk and behavior associated with the following activities: i) Going to the gym, ii) meeting 5 or more persons who are not part of one's own household indoors, iii) meeting 5 or more persons who are not part of one's own household outdoors, iv) using public means of transportation, v) going to the supermarket, vi) attending a sport event or music concert as spectator, vii) traveling by plane or train and viii) attending an on-campus university lecture

Understanding the engagement in those activities and the perceived risk associated with them is useful to study spillover effects. Second, I conducted a norm elicitation and memory task in the Endline Survey to explore potential mechanisms underlying the dynamic updating of risk perceptions. The norm elicitation task was akin to the task employed by Bursztyn et al. (2020). Parallel to the Endline surveys, I asked a random student who was not participating in the experiment for her daily evaluation of the appropriateness of engaging in certain activities in light of the danger posed by COVID-19. Then, the subjects of this study were asked to guess how appropriate the engagements in those activities were perceived by their external peer. I incentivized participants to report truthful guesses by providing an additional payment of 50EUR for one random subject whose responses matched the responses of the external student. In the memory task, the subjects were incentivized to correctly recall their risk assessments reported in the Baseline survey. I randomly paid one subject an additional amount of 50EUR if her responses in the memory task matched with her assessments of risk from the Baseline survey. Finally, the Baseline survey contained a questionnaire to elicit risk, time and social preferences (Falk et al., 2016) and socio-demographic variables. The Endline survey contained a questionnaire to elicit additional background information[3] and a Cognitive Reflection Test (CRT) consisting of three questions (Frederick, 2005). Table A1 in the appendix provides an overview of the three surveys and their contents.

2.3 Treatments

My experiment included two treatment manipulations resulting in a 2 x 2 between-subject design. Table 1 provides an overview of its four treatments. The main treatment manipulation was an exogenous variation in the size of the gift card incentive. I randomly distributed either gift cards with a value of 1.50EUR (15SEK) or gift cards with a value of 10EUR (100SEK). Providing a monetary incentive, which is earmarked for a hedonic yet (somewhat) risky activity, the gift card sought to test a subject's reported risk assessment and allowed to explore how the assessment translates into real behavior. Most importantly, however, I am able to study whether a subject adjusted her risk assessment in response to the incentive to justify her actions. I introduced the gift card and announced its value after the participants had filled in the Baseline survey. Thus, I can analyze the dynamics triggered by the incentive departing at a point, at which the reported risk assessments are unaffected by the intervention.

One potential problem with the distribution of gift cards is that the researcher, by handing them out, could implicitly send the signal that café visits during a pandemic are ethically appropriate. To prevent that such a signal would only be sent in one treatment group, I decided to distribute gift cards to all participants. That is, I chose a design with high vs. low incentives rather than a design where only one treatment was incentivized.

My second experimental manipulation was an information treatment. At the start of the Baseline survey, I truthfully informed randomly chosen participants with medical insights about long-term health effects of

[3]As part of the collection of background information, I asked the students if they had collected any additional COVID-19 related information during the two surveys or communicated with other students who participated in this study.

Table 1: Experimental Treatments

Treatment	Gift card value	Information	Obs
LowIncentive-NoInfo	1.50 EUR	No	109
LowIncentive-Info	1.50 EUR	Yes	107
HighIncentive-NoInfo	10 EUR	No	114
HighIncentive-Info	10 EUR	Yes	104

COVID-19 on young adults and information about how young adults jeopardize older generations. The aim of this treatment was to raise awareness for different dimensions of risk to study if information can help alleviating the engagement in self-deception and ultimately the participation in risky activities. All provided information was based on academic insights and presented in form of summary statements (see appendix, section B.1). It was short and prepared such that it was easy to understand. I also included the academic source of the information next to the statements. Unlike the gift card incentive, the information was presented at the beginning of my experiment, that is, just before the start of the Baseline survey. It was not repeated at any other point of the study.

2.4 Experimental Procedures

The experimental surveys included 434 students, aged 18 to 30, from different departments of Lund University. They were conducted online, between March 2021 to April 2021, using the experimental software oTree (Chen et al., 2016). To reach out to students with different backgrounds, I first contacted various lecturers and asked them to share an invitation message with a link to register for my study through their course communication platform. I also asked the lecturers to stress that both registration and participation would be entirely voluntary. Clicking on the link, all students interested in participating had to fill in a registration form where they indicated their gender, age and study field, whether they lived in Lund, whether they had previously been infected with COVID-19, and whether they were part of the COVID-19 risk group. They also provided their email address to be contacted for participation. In line with my pre-registration and requirements of the ethics review board, I used those information to exclude subjects who did not fulfill the age requirement, did not live in Lund, had previously been infected with COVID-19 or were part of the COVID-19 risk group. The remainder was randomly contacted by email for participation.

The participation mail (see appendix, section B.4) included a link to access the study and a unique participation ID that allowed me to track the subject and match her responses from the Baseline, Interim and Endline surveys. Participation mails were sent out over the entire study period from March to April 2021 until the desired number of participants was reached. Aiming for the pre-registered target of 400 subjects, I recruited a total of 500 students. The reason for this excess in recruiting was that I expected roughly 20% to withdraw from the study either before the Baseline or before the Endline survey.

Every subject signed up to participate in two surveys and knew that the Endline survey followed exactly 15 days after the Baseline survey. Prior to participation, every subject was informed that she would receive a flat participation fee of 15EUR for the two surveys but could also earn additional money during the two surveys. Information about the gift card incentive was not revealed until after the Baseline survey. Before the Baseline survey, all subjects had to undergo an additional brief pre-screening to ensure (once more) that no participant was part of the COVID-19 risk group or contracted COVID-19 prior to the experiment. Moreover, I also ensured that participating students were physically present in Lund over the time of the experiment.

Figure 1 shows a time line of the experimental procedure for each participant. For subjects assigned to the INFORMATION treatment, the experiment started with an information page and 2 control questions to ensure the information was understood. For all other subjects, it began with the Baseline survey (for subjects assigned to the INFORMATION treatment, the Baseline survey was part two). Upon completion of the Baseline survey, each participant was introduced to the gift card incentive. I informed the subjects about the value of the gift card and announced that I would send an e-mail within 24 hours, including an activation link and the terms of usage. The content of that mail can be found in section B.5 in the appendix. In the mail, I further explained that the gift card needed to be activated on a phone or tablet and I stressed that it should not be activated before its usage. Once activated, the gift card was valid for one hour and could not be re-activated thereafter. That is, any accidental activation would lead to an expiration of the gift card. I did not inform the subjects, that during the activation my three non-incentivized questions to elicit risk perceptions (see page 7) had to be answered once again. I deliberately chose to surprise the subjects with those three questions to ensure they would be answered at a time when a subject had the clear intention of visiting the café but before the actual visit took place. In order to distinguish whether the risk assessment is motivated to justify the visit or formed in response to the visit, such an exact timing of the risk elicitation before the café visit is crucial.[4]

Each gift card had a validity period of 14 days, which implies that it had to be activated and used in between the Baseline and Endline survey. After activation, the gift card had to be shown to one of the personnel, who verified the identity of the participant by checking her ID card. This procedure was necessary to ensure that gift cards were not passed on to other persons and it implies that the name of the participant had to be linked to the gift card. Note, however, that the participant's name was not saved together with the data collected during the surveys.

Finally, each subject participated in the Endline survey. It lasted approximately 15 minutes and took place 15 days after the Baseline survey, which implies that if a subject decided to redeem her gift card, it was activated and used before the subject filled in the Endline survey. This is important because it

[4]I note that it is possible to inspect the café before activating the gift card and hence forming a risk assessment that is based on the number of guests who currently visit the café. However, I believe that the construction of the café alleviates such concerns to some extent. The café is build over two floors, where the first floor only includes the counter and the second floor includes all tables and seats. It is not possible to determine the load of the café without passing the counter and inspecting the second floor.

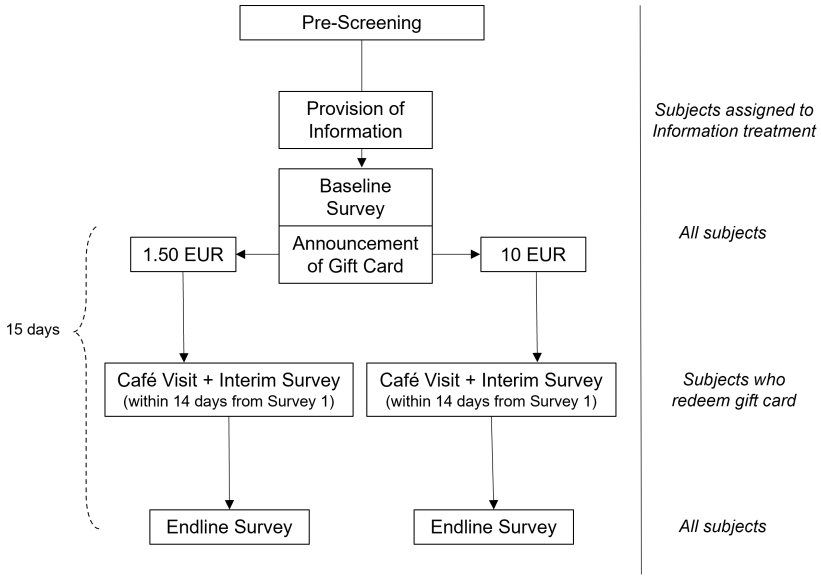

Figure 1: Timeline of Experimental Procedure

facilitates to capture the subject's risk assessment after the café visit, and thus, complements the picture about the assessment's updating pattern. Provided a subject redeems her gift card, I obtain three separate risk assessments: One before the treatment intervention, one after the treatment intervention but before the café visit and one after the treatment intervention and after the café visit. This allows to identify the exact timing of a potential perception update. Controlling for different alternative explanations, I interpret reductions in risk perceptions that took place prior to the café visit as support for a motivated assessment and reductions, which took place after the visit, as instances of standard Bayesian belief updating.

2.5 Hypotheses

My experiment was designed to test the following pre-registered hypotheses. First, I investigate how the gift card incentive affected behavior, that is, the propensity to visit a café. Although café visits in times of a pandemic are more risky and less socially appropriate, my first hypothesis is straightforward as it rests on fundamental economic principles:

Hypothesis 1 (Incentives and Behavior)**.** *Subjects assigned to the 10EUR incentive treatment will visit cafés more often than subjects assigned to the 1.50EUR incentive treatment.*

My main point of interest in this study is to understand whether an incentive to engage in a risky activity causes a person to update her risk assessment such that the risky action becomes justifiable. While Bayesian theory would predict that an updating of perceptions and beliefs should only happen *in response* to new or changed information, the literature on motivated reasoning suggests that beliefs may also be formed *in anticipation* of an event in order to gain anticipatory utility (see e.g. Brunnermeier & Parker, 2005; Caplin & Leahy, 2001; Kőszegi, 2010). It implies that a perception updating of the risk could also take place in

the absence of new information but in response to an incentive change. Building on this notion of motivated reasoning, I form my second and main hypothesis:

Hypothesis 2 (Incentives and Risk Assessments)**.** *Subjects who receive a 10EUR incentive to visit a café will perceive the danger of COVID-19 associated with a café visit as smaller (in the Endline survey) than subjects who receive a 1.50EUR incentive.*

In addition to the Gift Card treatment, my experiment also included an Information treatment. The main purpose of this treatment was to study if information about the source of the danger (i.e. COVID-19) can alleviate the propensity to form motivated risk assessments. Thus, I am particularly interested in the interaction of the two treatment interventions but consider this analysis as rather explorative. It is also possible, however, to study the direct effects of the Information treatment on both risk assessments and behavior. My third hypothesis addresses the link between information and risk assessments:

Hypothesis 3 (Information and Risk Assessments)**.** *Subjects who receive information about the health effects of COVID-19 perceive COVID-19 as more dangerous than subjects assigned to the* NoInformation *treatment. They will assess the general risk of the virus associated with a café visit (and the risk related to other activities) in the Baseline survey and in the Endline survey as greater than subjects in the* NoInformation *treatment.*[5]

Hypothesis 4 builds on its predecessor in that it makes a prediction as to how an increase in perceived risk translates into real behavior:

Hypothesis 4 (Information and Behavior)**.** *Subjects assigned to the* Information *treatment will visit cafés and restaurants less often (or at less busy times) than subjects assigned to the* NoInformation *treatment.*

3 Main Results

The following section is split in three parts. First, I show how the gift card treatment affected café visits in between the Baseline and the Endline survey. This is important in particular to understand if the difference in the gift card incentive really triggered a different desire to visit the café - a necessary condition to gain anticipatory utility and engage in motivated updating of risk assessments. Second, I turn to my key point of interest and focus on whether the incentive affected the participants' subjective risk assessments. Third, I present the results of the Information treatment.

3.1 Risky Behavior

Of the 500 recruited students, 470 participated in the Baseline survey and 434 in the Endline survey. In line with my pre-registration, my analysis only uses the data of the 434 subjects who finished all parts of the

[5] I note that the pre-registered hypothesis did not include the supplement "*and in the Endline survey*".

Table 2: Regression Results - Café Visits

	Cafe Visit					
	Used gift card at specific café		Eat inside at specific café		Any café before endline survey	
	(1)	(2)	(3)	(4)	(5)	(6)
10EUR Gift Card	0.402***	0.453***	0.270***	0.297***	0.131***	0.138**
	(0.039)	(0.053)	(0.034)	(0.048)	(0.044)	(0.060)
Information	-0.023	0.029	-0.027	0.001	-0.023	-0.016
	(0.039)	(0.039)	(0.034)	(0.026)	(0.044)	(0.066)
Information × 10EUR		-0.104		-0.055		-0.015
		(0.078)		(0.068)		(0.088)
Constant	0.099***	0.073***	0.050**	0.037**	0.646***	0.642***
	(0.026)	(0.025)	(0.021)	(0.018)	(0.039)	(0.046)
Observations	434	434	434	434	434	434
R-squared	0.20	0.20	0.13	0.13	0.02	0.02

Notes: OLS regressions of café visits. Columns (1) and (2) show coefficient estimates for directly observable gift card data. The dependent variable is binary and indicates whether the gift card for the specific café I collaborated with was redeemed. Columns (3) and (4) show coefficient estimates for directly observable gift card data. The dependent variable is binary and indicates whether the gift card for the specific café I collaborated with was used to eat inside (as opposed to order take-away). Columns (5) and (6) show coefficients estimates for self-reported café visits. The dependent variable is binary and indicates whether any café was visited in the two weeks prior to the Endline survey. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

experiment. Of those, 126 decided to use their gift card. Table A2 in the appendix displays a number of summary statistics, which demonstrate that all treatments were balanced in terms of demographic variables and with respect to elicited preferences. It also shows that prior to the Baseline survey there did not exist any significant treatment differences in the number of café visits.

To assess how my treatment interventions affected a subject's propensity to visit a café, I exploit different types of data. I use both the direct measure of subjects who activated and redeemed their gift cards and the subjects' self-reported measure of café visits in the period two weeks prior to the Endline survey. The former allows me to document visits at one particular café only. However, it provides very detailed information about that visit. The latter captures café and restaurant visits over the last two weeks, independent of the visited locality. But, since it is a self-reported measure and relies on subjects remembering and reporting correctly, it is also more susceptible to noise. In combination, both measures provide a very holistic picture of the subject's behavior related to café visits.

Of the 126 students who redeemed their gift card, 107 came from the HighIncentive treatment and 19 from the LowIncentive treatment. 75 subjects used their gift card to eat inside the café, 51 ordered take away. Table 2 displays the treatment effects on café visits.[6] Columns (1) to (4) show the results of the data that is directly observable because it was collected in the course of the gift card redemption. They reveal that the size of the gift card value made an important difference. Participants who received the 10EUR gift card

[6]Table A3 in the appendix shows results of the same regressions but with control variables. The estimated treatment effects remain unchanged.

were approximately 40 percentage points more likely to use their gift card and approximately 27 percentage points more likely to sit inside the café than participants who received the 1.50EUR gift card. Both results are statistically significant. Relative to the LowIncentive treatment, this corresponds to an increase in visits at the café I collaborate with of more than 500% and demonstrates that the 10EUR gift card incentive had a strong effect on the propensity to visit the café I collaborated with.

To investigate if the gift card incentive in the HighIncentive treatment really triggered additional café visits or merely caused the students to visit a different café, I next focus on the self-reported café visits at any café two weeks prior to the Endline survey. Columns (5) and (6) present the subjects' self-reports. I find a significant treatment effect of the gift card incentive two weeks after the treatment intervention. The regressions indicate that subjects in the HighIncentive treatment were approximately 13 percentage points more likely to visit a café than subjects assigned to the LowIncentive treatment, which corresponds to an increase in café visits of 21%. This marks an increase of approximately 25% relative to cafe visits prior to the Baseline survey. The dependent variable in columns (5) and (6) is dummy coded indicating whether a person has visited a café or not. The results thus provide insights into the gift card effect on the extensive margin. I binarized the dependent variable to avoid an inflated weighting of high numbers of café visits that result from working activities in cafés. Table A4 in the appendix sheds light on the intensive margin effect. It shows the regression results for the original survey response - number of café visits. Excluding 14 subjects who reported 6 or more café visits over the two week period between the Baseline and the Endline survey, I find that subejects in the HighIncentive treatment report 0.3 café visits more on average. This result is statistically significant and supports the evidence that the 10EUR gift card incentive did not just induce a substitution effect but was successful in encouraging additional café visits. My regression results are consistent with hypothesis 1 (Incentives and Behavior) and support the standard economic notion that incentives induce behavior changes through changes in relative prices. This basic mechanism also works when the incentivized activity is considered risky.

3.2 Risk Assessments

Dynamics Induced by the Gift Card Incentive

To address the study's key point of interest, in this section, I analyze the dynamics of perceived risk of COVID-19 related to a café visit that were induced by the different gift card incentives. Figure 2 depicts the average reported risk associated with a café visit by survey and by gift card treatment. The variable displayed captures the total perceived risk of contracting COVID-19 and jeopardizing both oneself and others during and after the visit. As expected, in the Baseline survey, prior to the introduction of the gift card treatment, the average risk assessments across the two gift card treatments are very similar. It indicates that there did not exist any important pre-intervention differences in the beliefs about the risk associated with a café visit. Shifting attention to the Endline survey, however, it is obvious that the average risk assessments induced by the different gift card values change. While subjects who were offered the low, 1.50EUR incentive appear to

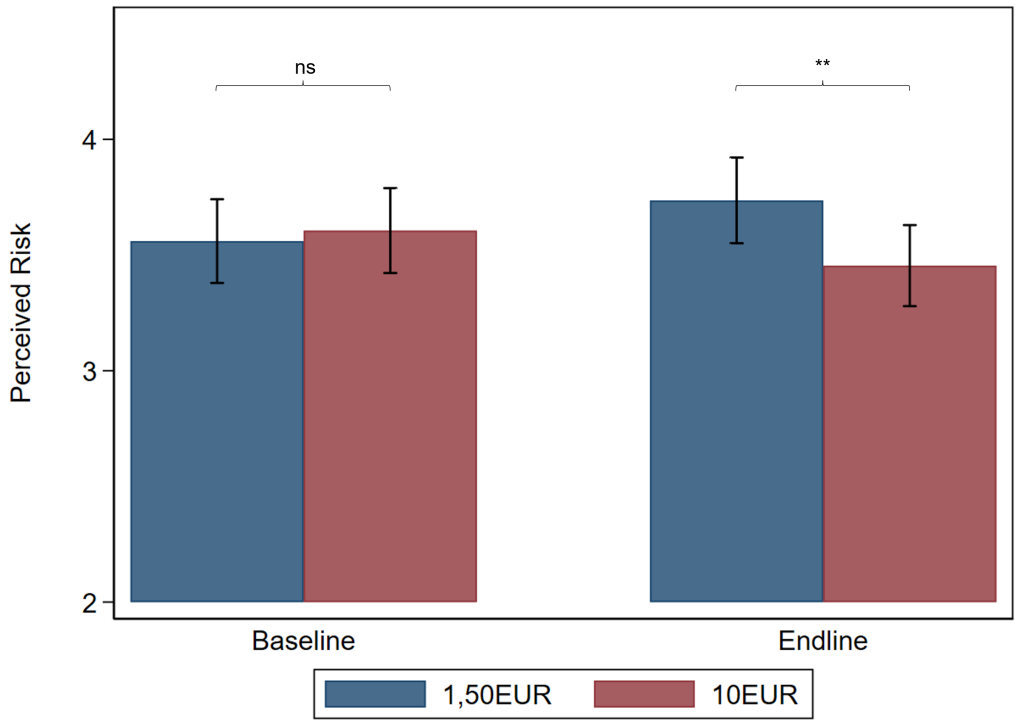

Figure 2: Perceived risk associated with café visit

Notes: The figure shows the average total risk associated with a café visit for the two gift card treatments in the Baseline and Endline survey. It captures the response to question 3 (Total Risk), where 1 indicates low risk and 7 indicates high risk. Test results stem from non parametric Wilcoxon Ranksum tests. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

perceive a café visit as more risky than in the Baseline survey, participants assigned to the HighIncentive treatment perceive the risk as smaller. The treatment difference is statistically significant (Wilcoxon rank-sum test: $p = 0.024$).

To confirm this visual intuition more formally, I conduct multiple OLS regressions using the responses to my three main survey questions as dependent variables. Table 3 presents the regression results. All assessment measures of risk are standardized, so estimates are in units of standard deviations. Starting with the total perceived risk associated with a café visit and focusing on the effect of the gift card incentive, the data collected in the Baseline survey supports the impression that no treatment differences existed prior to the gift card intervention. Since the incentive was only introduced at the end of the Baseline survey, this result is as expected. However, turning to the regression results from the Endline survey, the effect of the variation in the gift card value becomes pronounced. Providing a subject with the high, 10EUR incentive causes a drop in the average perceived risk by ca. 0.21 sd relative to the risk perceived in the LowIncentive treatment. This result is robust to adding various controls.

The evidence presented thus far, has exploited cross-sectional treatment variation. However, since each subject participated in the Baseline and the Endline survey, I am also able to analyze within-subject variation

Table 3: Regression Results - Risk Assessment

	Total Risk of Cafe Visit					Risk for Self	Risk for Others
	Baseline	Endline		Panel			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
10EUR Gift Card	0.037	-0.205**	-0.230**	0.037	0.021	-0.033	-0.037
	(0.096)	(0.095)	(0.093)	(0.096)	(0.095)	(0.098)	(0.096)
Information	0.206**	0.212**	0.208**	0.209**	0.206**	0.218**	0.182**
	(0.097)	(0.096)	(0.095)	(0.089)	(0.088)	(0.090)	(0.087)
Endline				0.130**	0.130**	0.137***	0.155***
				(0.052)	(0.052)	(0.045)	(0.051)
Endline × 10EUR				-0.242***	-0.242***	-0.099	-0.282***
				(0.072)	(0.072)	(0.068)	(0.075)
Constant	-0.085	0.042	0.057	-0.086	-0.077	-0.125	-0.035
	(0.082)	(0.083)	(0.082)	(0.080)	(0.079)	(0.083)	(0.082)
Observations	434	434	434	868	868	868	868
R-squared	0.01	0.02	0.07	0.02	0.06	0.02	0.02
Controls			✓		✓		

Notes: OLS regressions of standardized risk assessments (z-scores). Columns (1) to (5) show the results for the total perceived risk (Total Risk) associated with a café visit. Column (6) shows the results for the perceived risk for oneself (Risk for Self). Column (7) shows the results for the risk the subjects believes to impose on others (Risk for Others). In columns (1) to (3) I exploit cross-sectional data from the Baseline and Endline survey, respectively. Columns (4) to (7) present the regression results of the entire panel with standard errors clustered on the individual level. Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

induced by the gift card incentive. Columns (4) and (5) of table 3 document the results of the panel analysis where the treatment effect is captured by the difference-in-difference estimator *Endline* × *10EUR*. Independent of the model specification, both regressions reveal that the difference in risk assessments between the two gift card treatments changes by approximately 0.24 sd between the Baseline and the Endline survey. The wedge that is driven between the two treatments is a result of different dynamics induced by the different gift card values. Subjects assigned to the LowIncentive treatment experience a small risk increase of 0.13 sd over the 15 days between the two surveys consistent with the general time trend of increasing COVID cases during the period of the study (see Appendix, figure A1). In stark contrast, the dynamic in the HighIncentive treatment is reverse, that is, subjects exposed to the 10EUR incentive experience a drop in perceived risk. The result is robust to adding different control variables as well as individual fixed effects (see table A5 in the appendix). It provides support for hypothesis 2 (Incentives and Risk Assessments) suggesting that subjects change their risk assessment in response to an incentive. However, it does not allow to draw inferences as to whether the updating of assessments is a direct response to the incentive or a result of the café visit. My analysis in the next subsection will shed light on this question.

Focusing on the responses to the survey questions 1 (Risk for Self) and 2 (Risk for Others), my data further allows for distinction between different risk components; the risk a subject perceives for herself and the risk the subject believes to impose on others. Models (6) and (7) of table 3 show the regression results for the two layers of risk using the data from both surveys. The estimates of the interaction term in both models

Table 4: Risk Assessment - Incentivized Measure

	Expected share of all new infections due to café visits (in %)					
	Endline		Full Panel		Reduced Panel	
	(1)	(2)	(3)	(4)	(5)	(6)
10EUR Gift Card	-1.462	-1.142	1.803	1.919	1.517	1.663
	(1.277)	(1.262)	(1.482)	(1.489)	(1.159)	(1.149)
Information	1.334	1.321	1.707	1.664	0.692	0.618
	(1.282)	(1.278)	(1.208)	(1.206)	(0.985)	(0.966)
Endline			-1.912**	-1.912**	-0.636	-0.636
			(0.914)	(0.917)	(0.766)	(0.769)
Endline × 10EUR			-3.258**	-3.258**	-3.021***	-3.021***
			(1.359)	(1.364)	(1.108)	(1.112)
Constant	18.344***	18.190***	20.071***	20.034***	16.867***	16.854***
	(1.061)	(1.051)	(1.167)	(1.164)	(0.926)	(0.916)
Observations	434	434	868	868	742	742
R-squared	0.01	0.04	0.02	0.04	0.02	0.05
Controls		✓		✓		✓

Notes: OLS regressions of expected share of COVID new infection due to café and restaurant visits (Incentivized Risk Assessment). Columns (1) and (2) show the results from a between-subject comparison. It exploits cross-secitional variation using data from the Endline survey. Columns (3) and (4) present the regression results of the entire panel. Columns (5) and (6) present the results of a reduced panel. The reduced panel excludes subjects who reported that the share of new infections that is due to café or gym visits is greater than 50%. Standard errors are clustered on the individual level. Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

are negative and thus support the result that the difference in risk assessments induced by the different gift card values changes in between the two surveys. However, only the estimate in model (7) is statistically significant. The size of the treatment effect on *Risk for Others* (ca. 0.28 sd) is similar to the effect on the perceived *Total Risk* but is considerably larger than the effect on *Risk for Self* (ca. 0.1 sd). This result suggests that it is the risk imposed on others, which is mainly affected by the incentive and subject to motivated updating. Since it is difficult for a person to determine the risk imposed on others as precisely as the risk for herself, it likely provides the necessary wiggle room to engage in a self-serving updating of risk assessments.

As pointed out before, all of the three survey measures for perceived risk presented in table 3 were intentionally kept non-incentivized. To provide an alternative measure for risk that complements the analysis, both the Baseline and the Endline survey therefore included an incentivized question that asked the students to report their belief about the share of COVID-19 new infections that is due to café and restaurant visits. Table 4 reports the regression results for the incentivzed measure of perceived risk.

All regression estimates for the analysis of the incentivzed measure that are indicative for the treatment effect of the HighIncentive treatment show the expected negative sign. However, only the results from the panel data analysis, which exploit the power from both between-subject and within-subject variation are statistically significant. They suggest that subjects provided with the 10EUR incentive not only believe

that the share decreased over the two week period, the expected drop is also on average 3.3 percentage points greater than the drop for subjects in the LowIncentive treatment. While the decrease in the LowIncentive treatment is approximately 9.2% relative to the average expected share at Baseline, the decrease in the HighIncentive treatment corresponds to 22.8%. I interpret the expected share of new infections that is due to café visits to be instrumental for the perceived risk of visiting a café and thus think that the results for the incentivized measure complement those for the unincentivized measure from above.

The Timing of Updating

The evidence provided in the previous section suggests a clear treatment effect of the 10EUR gift card incentive on subjects' perceived risk. The larger the incentive to visit a café, the stronger the propensity for participants to update their risk perception downwards. However, one decisive question the data presented so far could not answer is whether the updating induced by the gift card incentive takes place prior to the café visit or afterwards. Providing an answer to that question constitutes an important part of my strategy to distinguish a motivated assessment updating from supposedly standard Bayesian updating. It is crucial because it allows to identify whether risk assessments are updated in anticipation of the café visit are as result of it. To address the question, I exploit data from my Interim survey, collected for those participants who redeemed their gift card. This data includes another set of survey responses to my three main questions eliciting the risk related to a café visit. Since it was collected just before the café visit and participants were not informed about it, the data contains useful information. In combination with the data from the Baseline and Endline survey, it helps to identify the timing of the assessment updating.

The left panel of figure 3 depicts the dynamic for the average perceived total risk of visiting a café. It demonstrates that subjects, who visited the café reduced their risk perception just before the activation of the gift card, in anticipation of their visit. Relative to the Baseline survey, the risk assessment before the visit drops by approximately 0.33 sd (t-test: $p = 0.007$), and then remains at roughly the same level until the Endline survey (t-test: $p = 0.725$). This dynamic is mainly driven by subjects who use their gift card to sit inside the café.[7] Had the updating taken place in response to the café visit (rather than in anticipation of it), we would have expected a drop in risk assessments after the visit, that is, in between the Interim and the Endline survey. Clearly, the data does not support that notion. It allows for the important interpretation that the updating of risk assessments did not follow the experience of the café visit, and thus, took place in the absence of new or changed information. This is inconsistent with Bayesian updating theory but consistent with the notion of motivated reasoning. To provide insights into the heterogeneity of updating timings, figures A3 and A4 in the the appendix show the dynamics for all 126 subjects who activated and used their gift card sorted for whether they sat inside the café or ordered take away. Focusing on the subjects who are the main drivers of the average dynamic - students who eat inside the café - I find that almost 50% exhibit an updating pattern that is consistent with a motivated reasoning. Only 29% of the subjects fit the definition

[7] Figure A2 in the appendix provides an illustration for gift card users split into two groups: Gift card users who sit inside the café and gift card users who eat outside.

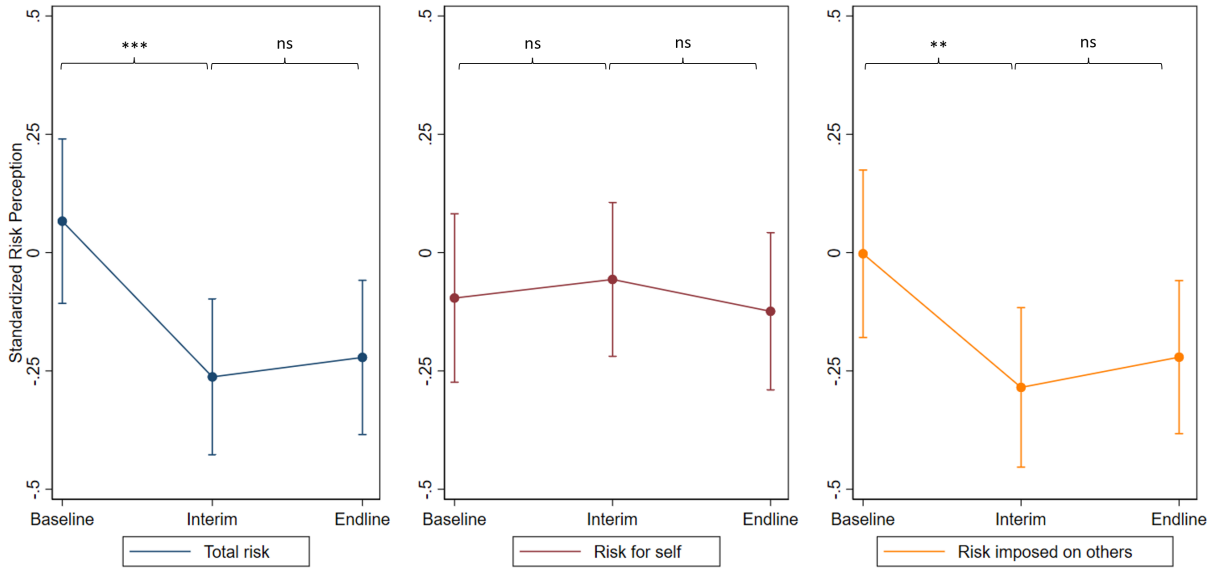

Figure 3: Timing of Updating

Notes: The figure shows dynamics of average risk assessments for subjects who redeemed and used their gift card. The left panel shows the dynamic pattern for the Total Risk of a café visit. The middle panel shows the dynamic for the reported risk perceived Risk for Self. The right panel depicts the dynamic for the risk of a café visit, which is believed to be imposed on others (Risk for Others). The variables are standardized (z-scores). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

of a standard Bayesian.

The middle and the right panel of figure 3 show the dynamics for Risk for Self and Risk for Others, respectively. Interestingly, while the dynamics for risk imposed on others follow the same trend as the total risk, there exists almost no temporal variation in the perceived risk for oneself. This confirms the evidence presented in table 3 that it is the risk imposed on others, which is the main driver of the overall perceived risk and that it is the component of risk that can be motivated easiest.

Although the data collected during the activation of the gift card was gathered before the subject visited the café, does it really allow to rule out that the updating of risk perceptions might be a result of the workload of the café? After all, a subject could have evaluated the workload before she decided to use the gift card. To alleviate that concern, I split the subjects who visited the café in two groups; those who visited the café at a high (above median) workload and those who visited the café at a low (below median) workload. Recall that the workload of the cafe is an information provided by the personnel of the café. Based on the number of customers, the information documents how much of the café's capacity is used each time a gift card is redeemed. The results for the perceived overall risk are presented in figure 4. Unless the average prior beliefs about the workload of the café was incorrect in that most of the subjects systematically overestimated the workload, Bayesian theory would predict that the updating of risk assessments should be both upwards and downwards, depending on the experienced workload. If the café is busy, subjects should assess the risk as higher; if the café is empty, they should assess the risk as lower. Inconsistent with Bayesian updating but

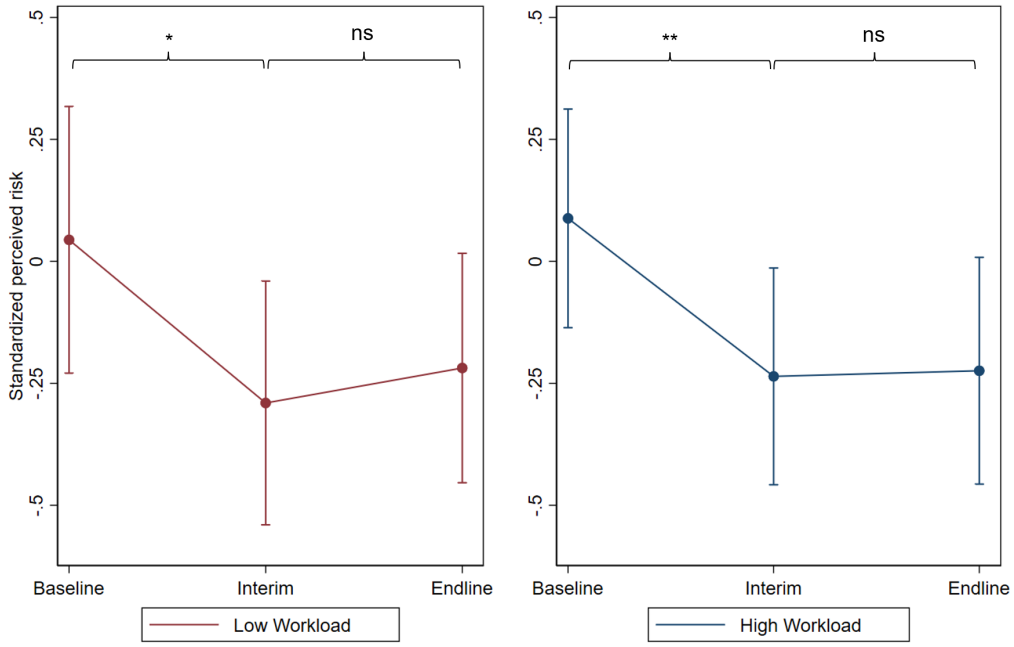

Figure 4: Timing of Updating for High and Low Workload of Café

Notes: The figure shows dynamics for assessments of total risk associated with a café visit by workload of the café. The left panel depicts the dynamic for subjects who visit the café at a low workload. The right panel shows the dynamic for subjects who visit the café at a high workload. The measure of *perceived risk* is standardized (z-scores). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

in line with the notion of motivated reasoning, the data suggests that the average subject always reduced her risk assessment, regardless of the actual workload. There exists basically no difference in the assessment updating across the two groups. Risk assessments before the café visit drop by approximately 0.32 sd (in the low workload group) or 0.33 sd (in the high workload group) relative to the Baseline survey. Both assessment updates are statistically significant. In combination with the fact that subjects could not evaluate the workload from outside the café because its seating area is located on the second floor, the evidence presented lends support to the interpretation that the workload of the café did not influence the assessment updating prior to the café visit.

Another theory, which could potentially explain the updating of risk perceptions is that participants who visited a café actively searched for additional information to be better informed about the risks of a cafe visit. Since the updating in response to an information acquisition would also take place before the café visit, the dynamics presented in figures 3 and 4 are not well suited to alleviate such a concern. However, I collected additional survey data to address it. In the Endline survey, I asked every subject if she had searched for additional information about COVID-19 (e.g. information about the infection rates in cafés and gyms) and asked her to specify the information in case she did. I also elicited each subject's news consumption over the two weeks between the two main surveys and asked about communication with other study participants to

Table 5: Regression Results - Information Effect

	Perceived Risk of Cafe Visit			
	Endline		Panel	
	(1)	(2)	(3)	(4)
Information	0.236*	0.154		0.210
	(0.139)	(0.135)		(0.135)
10EUR Gift Card	-0.181	-0.226*		0.028
	(0.130)	(0.123)		(0.128)
Info × 10EUR	-0.049	0.025		-0.013
	(0.191)	(0.181)		(0.189)
Endline × Info			-0.011	-0.011
			(0.147)	(0.104)
Endline × 10EUR			-0.259*	-0.259***
			(0.135)	(0.096)
Endline × Info × 10EUR			0.035	0.035
			(0.205)	(0.145)
Constant	0.030	0.075	0.034	-0.079
	(0.096)	(0.093)	(0.025)	(0.092)
Observations	434	434	868	868
R-squared	0.02	0.14	0.86	0.06
Controls		✓		✓
Individual FE			✓	

Notes: The table reports results from 4 OLS regressions. The dependent variable is Total Risk. Columns (1) and (2) show the results from cross-sectional data from the Endline survey. Columns (3) and (4) show the results from panel data using observations from both the Baseline and the Endline survey. Standard errors are clustered on the individual level. Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

explore potential spillovers effects.[8] Table A8 in the appendix presents the treatment effects for the three measures. The regression results show no significant differences in behavior for the two gift card treatments suggesting that subjects who received the 10EUR incentive were not better informed about the risks of COVID-19 than subjects endowed with a 1.50EUR gift card. The only treatment effect indicated in table A8 exists for subjects assigned to the INFORMATION treatment. I will discuss the results of that treatment in the next subsection.

3.3 The Role of Information

Lastly, I turn to the effects of the INFORMATION treatment. Recall that participants assigned to that treatment received two different types of information; i) information about possible long-term health effects of COVID-19 for young adults and ii) information about how infected young adults jeopardize older generations

[8] I note that there existed a coding error for the survey responses to the communication measure. Subjects were asked to distinguish between no communication, communication before the Baseline survey and communication before the Endline survey. Unfortunately, the error does not allow to separate the two former responses. The final measure can only distinguish if communication in between the two main surveys took place or not.

who are more vulnerable to the virus. All information was provided at the start of the Baseline survey and was not repeated during the Endline survey. Although the main purpose of this treatment intervention was to study if the provision of information can help alleviate the formation of motivated risk assessments, it is also interesting to analyze the treatment's direct effect on risk perceptions. Table 3 in subsection 3.2 reports the regression results for the treatment variable Total Risk.[9] It suggests that information exposure appears to be effective in altering the subjects' perception about the risk associated with a café visit. Subjects assigned to the treatment assessed the risk of a café visit as significantly higher than subjects who did not receive the information. The treatment effect corresponds to ca. 0.21 sd and is temporally stable over the 2 week study period, consistent with hypothesis 3 (Information and Risk Assessments). The long-term effect, however, may appear surprising since the information treatment did not seem to affect the propensity to visit a café. None of the 7 estimates in table 2 (subsection 3.1), neither from the self-reported café visits nor from the gift card data, suggests that participants who received information were more reluctant to visit cafés than participants who did not receive the treatment. Also, I find little evidence that the provided information reduces the propensity to visit a café for subjects endowed with the 10EUR gift card incentive. None of the interaction terms included in models (2), (4) and (6) of table 2 is statistically significant, which implies that subjects who received a 10EUR gift card as well as the information treatment did not exhibit a different behavior in terms of gift card usage and indoor visits. One possible explanation for this finding could be that subjects did not perceive the information as salient enough to remember it when they made their decision to visit a café but managed to recall it during the surveys.

Finally, I focus on the interaction of the two treatment interventions to investigate if information exposure can be a successful strategy to mitigate the propensity to motivate risk assessments. The regression results presented in table 5 do not show a significant effect of the interaction independent of the model specification. Neither the data of the Endline survey nor the panel data suggest that the information treatment was successful in shifting the risk assessments for subjects assigned to the HighIncentive treatment. Considering the inability of the Information treatment to prevent subjects from visiting cafés, this result does not seem surprising.

4 Mechanisms and Scope of the Effect

The results of my experiment are consistent with the notion of motivated reasoning and show that people can strategically adjust their assessments of risk to convince themselves that the engagement in a risky activity is justifiable. In this section, I will build on these findings and explore the mechanisms and heterogeneity underlying the updating of risk assessments. I will also investigate the the scope of the self-serving assessment formation. *How* does a person convince herself that the risk of a café visit is reasonably low? *Who* are the students that use their gift card and update their risk assessments self-servingly? And *how* does an assessment

[9] Table A6 in the appendix shows regression results using the measures for perceived risk for oneself and perceived risk imposed on others as dependent variables.

Table 6: Results from Memory and Norm Task

	Recall of Baseline Response						Second-Order-Belief	
	Total Risk		Risk for Self		Risk for Others		Appropriateness of Cafe Visit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
10EUR Gift Card	-0.339***	-0.357***	-0.148	-0.166*	-0.343***	-0.353***	0.132	0.137
	(0.094)	(0.094)	(0.093)	(0.093)	(0.118)	(0.117)	(0.096)	(0.097)
Information	0.107	0.107	0.040	0.048	-0.086	-0.081	-0.175*	-0.186*
	(0.094)	(0.095)	(0.093)	(0.094)	(0.118)	(0.119)	(0.096)	(0.095)
Constant	0.160**	0.169**	0.161**	0.166**	0.270***	0.272***	0.019	0.022
	(0.081)	(0.081)	(0.075)	(0.075)	(0.097)	(0.097)	(0.084)	(0.085)
Observations	434	434	434	434	434	434	434	434
R-squared	0.03	0.04	0.01	0.02	0.02	0.03	0.01	0.03
Controls		✓		✓		✓		✓

Notes: The table shows regression results for responses from two different tasks. Columns (1) to (6) show the results from the memory task indicating treatment effects on the discrepancy between reported risk from the Baseline survey and memorized risk. The dependent variables are Total Risk, Risk for Self and Risk for Others, respectively. Columns (7) and (8) depict the results from the norm task. The dependent variable is the reported (and incentivized) second-order belief about the appropriateness of a café visit. All dependent variables are standardized (z-scores). Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

update for the risk of a café visit affect the perceived risk associated with behavior in other domains? To provide answers to those questions, I exploit additional data collected in the course of this study.

4.1 Endogenous Memory

Bénabou and Tirole (2002) theorize and Zimmermann (2020) documents empirical evidence that selective recall can be a successful means for a person to deal with negative feedback, which constitutes a potential ego-threat or contradicts one's desired self-view. In this study, subjects did not receive ego-threatening feedback. Instead, they were confronted with an incentive that nudged them towards a behavior, which conflicted with previous assessments of risk. There existed a psychological cost resulting from the cognitive dissonance between the desire to visit a café and one's previous risk assessment. Similar to the case of negative feedback, however, this cost element could be reduced if the recall of previous risk assessments was systematically biased. I therefore explored if convenient memory lapses also serve as an effective aid to suppress obstructive past assessment.

To address that point, I conducted an incentivized memory task in the Endline survey, in which the subjects were asked to recall their responses from the Baseline survey. Among others, each subject had to recall her answers of the three questions that elicited the perceived risk associated with a café visit (i.e., Total Risk, Risk for Self and Risk for Others). I constructed a new recall variable *Recall* (= *Recalled Risk Perception from the Baseline Survey* − *True Risk Perception from the Baseline Survey*) for each risk component by calculating the difference between the subject's recalled response from the Baseline survey and her true response from the Baseline survey and use it as dependent variable in my regression analysis. Columns (1) to (6) of table 6 present regression results for the recall differences.

For all three measures of risk presented in table 6 there exists a treatment effect of the gift card value. Subjects endowed with the 10EUR gift card seem to underestimate their responses from the Baseline survey relative to subjects from the LowIncentive treatment. That is, the difference captured in the variable *Recall* is smaller for subejects in the HighIncentive treatment than for subejects in the the LowIncentive treatment. The discrepancy particularly stands out for the perceived total risk and risk imposed on others. Although, on average, the risk perceptions reported in the Baseline survey were very similar across the two gift card treatments (see result of section 3.2), the recalled perceptions 15 days later were significantly smaller; The recalled total risk in the HighIncentive treatment is 8% lower than in the LowIncentive treatment, the recalled risk imposed on others is 10% lower. The Information treatment, by contrast, does not seem to significantly affect the ability to recall previous responses.

Digging deeper into these findings and seeking to understand what drives the differences between the HighIncentive and LowIncentive treatments, it becomes obvious that in both treatments the direction of the recall error is consistent with the updating of risk perceptions over the two week study period. As the number of positive COVID cases increased, so did the perceived risk for subejects in the LowIncentive treatment. As a result of this (possibly subconscious) trend, it seems that some subejects in the LowIncentive treatment forgot their original responses from the Baseline survey and defaulted to their reported risk assessment of the Endline survey. Indeed, for all measures of perceived risk (Total Risk, Risk for Others and Risk for Self) the correlations between the recalled assessments and the reported assessments at the Endline survey are larger than the correlations between the recalled assessments and the original assessments at the Baseline survey ($p = 0.056$, $p = 0.048$ and $p = 0.023$, respectively). In the HighIncentive treatment, a similar behavior can be observed. However, since the average risk assessment in the HighIncentive treatment decreases over time in response to the gift card incentive, the recalled assessment is lower than the original assessment reported in the Baseline survey. Considering that the benchmark trend for memory lapses observed in the LowIncentive treatment develops contrary, I interpret the biased recall in the HighIncentive treatment as strategic ignorance. Relating these findings to Zimmermann (2020), the evidence supports the notion that not only negative feedback but also obstructive past assessments can be suppressed to reduce cognitive dissonances.

4.2 Norm Perception

Another potential mechanism that could underlie the strategic updating of risk assessments is a specific, treatment-induced norm perception. In a recent paper Bicchieri et al. (2020) document evidence, which suggests that people are able to motivate their beliefs about norms with the purpose to justify immoral but personally beneficial behavior. The notion that underlies their paper is the following: If a person can credibly convince herself that a social norm does not apply in a particular context, then, seemingly immoral behavior becomes more viable because it is not perceived as a transgression. I exploit data collected in an incentivized norm task to test if my treatment interventions induced different norm perceptions. In particular, I care

to learn whether subejects in the HighIncentive treatment develop a norm perception in a direction that allows them to think of a café visit as socially appropriate behavior.

Recall from section 2 that the subjects' goal in the norm task was to guess how socially appropriate students unrelated to my experiment rated a café visit. I interpret the second-order belief measure that is obtained as response as a proxy for the perceived norm. This interpretation is akin to e.g. Bursztyn et al. (2020) or Krupka and Weber (2013). The regression results, which allow for inferences about the treatment effects on norm perception are shown in table 6, column (7) and (8). Since the belief variable is standardized, effects can be interpreted in standard deviations. The estimates for the gift card treatment have the expected positive sign implying that subjects with the larger incentive might have perceived it as more appropriate to visit a café. However, the estimates are non-significant. This allows for the conclusion that a self-serving norm interpretation, did not play an important role for the justification of a café visit. The result that no treatment differences in norm perceptions exist also suggests that subjects did not interpret the size of the gift card value as a signal about the social appropriateness of a café visit. Had the gift card value been an implicit information about the danger of a café visit, its effect should have been captured in different norm perceptions, similar to the information provided in the Information treatment.

The Information treatment is the only treatment intervention that caused a (marginally) significant effect in the perception of norms. Although the respective information was provided before the start of the Baseline survey and the second-order belief elicited two weeks later, information exposure seems effective in shifting the belief about the appropriateness of a café visit downwards. The size of the effect corresponds to approximately 0.18 sd. Had the effect of the Information treatment mainly been driven by an experimenter demand, we would have expected to see no differences in the second-order belief elicitation between the Information and the NoInformation treatment. Since the norm-task was incentivized, the observed discrepancy between the two treatments would imply that a significant share of subjects in the Information treatment was willing to forgo a substantial additional payment just to satisfy the experimenter. I deem such a scenario as unlikely.

4.3 Heterogeneity

Which types of students are most susceptible to motivate their risk assessments and visit cafés? My analysis of risk assessments in section 3.2 has not revealed any information to answer this question. In my pre-registered analysis plan, I registered to analyze gender effects as well as heterogeneity that may result from different cognitive abilities. In addition, I also explore heterogeneity effects, which stem from differences in social preferences. The following analysis primarily serves an explorative purpose. Since it allows to reveal interesting correlations, I deem its insights useful nevertheless.

The results of the heterogeneity analysis are displayed in table 7. Note that this table includes two panels: Panel A shows the heterogeneity observed for café visits; panel B shows the heterogeneity for the perceived total risk associated with a café visit. Moreover, panel A exploits cross-sectional variation; panel B exploits

Table 7: Heterogeneity

	Panel A. Observed Behavior					
	Dep. Var: Used Gift Card			Dep. Var: Eat Inside		
	(1)	(2)	(3)	(4)	(5)	(6)
10EUR Gift Card	0.426***	0.476***	0.405***	0.330***	0.355***	0.273***
	(0.059)	(0.080)	(0.039)	(0.051)	(0.068)	(0.034)
Male	-0.078**			-0.006		
	(0.040)			(0.026)		
Male × 10EUR	-0.050			-0.119*		
	(0.078)			(0.067)		
CRT		0.022			0.017**	
		(0.017)			(0.008)	
CTR × 10EUR		-0.038			-0.044	
		(0.037)			(0.030)	
Altruism			0.001			0.001
			(0.018)			(0.011)
Altruism × 10EUR			0.057			0.076***
			(0.036)			(0.030)
Constant	0.130***	0.049	0.088***	0.040**	0.005	0.037***
	(0.034)	(0.031)	(0.019)	(0.020)	(0.010)	(0.013)
Observations	434	434	434	434	434	434
R-squared	0.21	0.20	0.21	0.14	0.13	0.15
	Panel B. Risk Assessment - Dependent Variable: Total Risk					
	Male		CRT Score		Altruism	
	Yes	No	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
10EUR Gift Card	0.085	-0.018	-0.001	0.090	0.019	0.055
	(0.142)	(0.134)	(0.126)	(0.151)	(0.140)	(0.132)
Endline	0.133*	0.128*	0.080	0.221**	0.155**	0.109
	(0.076)	(0.071)	(0.062)	(0.093)	(0.074)	(0.073)
10EUR × Endline	-0.243**	-0.242**	-0.241***	-0.263**	-0.155	-0.323***
	(0.102)	(0.102)	(0.087)	(0.125)	(0.105)	(0.098)
Constant	0.032	0.004	0.034	-0.013	-0.139	0.151*
	(0.105)	(0.089)	(0.087)	(0.109)	(0.101)	(0.091)
Observations	416	452	536	332	408	460
R-squared	0.00	0.01	0.01	0.01	0.00	0.01

Notes: The table consists of two panels. Panel A includes 6 OLS regressions to explore heterogeneity in café visits. The regressions exploit cross-sectional variation. Columns (1) to (3) show the results for subjects who use their gift card. Columns (4) to (6) show results for subjects who ate inside the café. Panel B includes 6 OLS regressions for the dependent variable Total Risk. The regressions exploit panel data. In columns (1) and (2), I split the sample based on gender. In columns (3) and (4), I split the sample at the median of the cognitive reflection test score. In columns (5) and (6), I distinguish between subjects low in altruism (below median) and subjects high in altruism (above median). Standard errors are clustered on the individual level. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

panel data. The variables of interest are *Male*, *CRT* and *Altruism*. *Male* is a binary variable and indicates if a subject is male or not.[10] *CRT*, comprises a score of the correctly answered cognitive reflection test question.

[10]The study included two non-binary subjects and two subjects who preferred not to reveal their gender. Those subjects are

Recall, that every subject had to answer three cognitive reflection questions and thus the score ranges from 0 (zero correct answers) to 3 (three correct answers).[11] *Altruism* contains the subject's self-evaluation of her social preferences and ranges from 0 (not pro-social) to 10 (very pro-social). In my regressions, this variable is treated as continuous.

Focusing on café visits displayed in panel A, I find no heterogeneity effect for cognitive abilities, neither for gift card usage not for indoor visits. Male subjects were approximately 11.9 percentage points less likely to sit inside the café than non-male participants but not less likely to use their gift card. Subjects who reported to be more pro-social had a significantly greater propensity to sit inside the café than less pro-social subjects. An increase of 1 sd in the self-assessment of altruism corresponds to a 7.6 percentage point increase in the probability of eating indoor. They also used their gift card more often, although this result is not statistically significant. This finding is surprising because more altruistic students perceive the risk associated with a café visit as larger (see table A12 in the appendix). It also stands in contrast with the finding from Campos-Mercade et al. (2021) and Fang et al. (2021), which suggests that pro-social people are more likely to adhere to social distancing rules to prevent the spread of the Corona virus.

Turning to the regression results for the reported total risk in panel B, I do not find any heterogeneity effects in perceived risk associated with a café visit for *Male* or *CRT*. For males and non-males as well as for subjects with low (below median test score) and high (above median test score) cognitive abilities the main treatment effect - updating risk perceptions downward - captured by the interaction variable *10EUR* $\times$ *Endline* is very similar and statistically significant. Thus, motivated assessment updating does not seem to be gender specific or driven by subjects with lower cognitive abilities. For *Altruism*, however, the case is different. Categorizing the subjects into low (below median) and high (above median) altruistic types, I find that for subjects low in altruism the main treatment effect is small and non-significant while for subjects high in altruism it is considerably larger and highly statistical significant. In fact, the treatment effect for subjects high in altruism (0.323 sd) is more than twice as large than for subjects low in altruism (0.155 sd). The results documented in this section provide suggestive evidence that pro-social motives play an important role for the motivation of risk assessments in my particular context. Intuitively, pro-social people likely enjoy a social activity such as a café visit more than less pro-social people. Therefore, the temptation to give in to the incentive and justify the visit could be particularly strong.

4.4 Spillovers

Besides the question of how a person manages to justify her risky behavior, one policy-relevant point of interest is to understand whether (and if so to what extent) an incentive to engage in one risky activity causes an updating of risk assessments related to behavior in other domains. In other words, does the motivation of one risk assessment spill over to the assessments of other risks or are individual assessments detached from

categorized as non-males. Excluding them from them subject pool does not change the results.

[11] Since no subject was registered for experiment participation in Lund prior to this study, I assume that a majority had not seen the cognitive reflection test questions before.

one another? To study that question, I elicited a number of additional risk assessments associated with different other activities: i) Going to the gym, ii) meeting 5 or more persons who are not part of one's own household indoors, iii) meeting 5 or more persons who are not part of one's own household outdoors, iv) using public means of transportation, v) going to the supermarket, vi) attending a sport event or music concert as spectator, vii) traveling by plane or train and viii) attending an on-campus university lecture.

For each of those variables, I conducted an OLS regression similar to that for the risk associated with a café visit. The results of the regressions can be found in table A9 in the appendix. For six of the eight activities (i, ii, v, vi, vii and viii) the interaction estimate of interest (*Endline* × *10EUR*) has a negative sign. It implies that relative to the Baseline survey, subjects with the 10EUR café gift card also experienced a stronger drop in risk assessments related to those other activities. However, only three of the perception estimates (i, ii, and vii) are statistically significant and yet again only two estimates (i, vii) remain significant after applying Romano-Wolf multiple hypothesis correction (Romano & Wolf, 2005).[12] The two activities that seem affected can be considered hedonic activities, which lends room for the interpretation that spillover effects are more likely in domains where self-persuasion is easier because the dissonance of hedonic desires and obstructive past beliefs is greater. It is, however, difficult to control for outside factors that could have affected the risk assessment related to the other activities and as such may have contributed to the spillover effect of the café gift card. For example, for many subjects the participation date of the Endline survey was just before the Easter weekend. This holiday in itself could have been an incentive for students to travel and thus motivate the associated risk.

To test the robustness of this result in relation to gym visits I can exploit data from an incentivized question for perceived risk. Just as for café visits, I asked each participant both before the Baseline and before the Endline survey how much of the total share of new COVID-19 infections is expected to be due to gym visits. I used study estimates from Helsingen et al. (2020) to determine the target responses and employed a quadratic scoring rule to ensure incentive compatibility. The spillover effects of the gift card treatment are shown in column (1) and (2) of table A11 in the appendix. I find that in the Endline survey subjects in the HighIncentive treatment expect the infection rate in gyms to be significantly smaller than subjects in the LowIncentive treatment. The difference corresponds to ca. 3.7 percentage points and is similar in size to the difference observed for the expected share of café visits (see table 4).

Finally, I can compare the self-reported gym visits prior to the Baseline and the Endline survey to shed light on whether treatment spillovers affected actual behavior. The regression results presented in columns (3) and (4) of table A11 suggest that no such behavioral effects exist. None of the estimates is statistically significant. In fact, the coefficient of interest, *Endline* × *10EUR* even has a negative sign. I therefore interpret the findings of this section such that spillovers of the gift card treatment may have affected risk assessments related to other hedonic activities but did not translate into more risky behavior.

[12] Romano-Wolf p-values of the interaction term *Endline* × *10EUR* are documented in table A10 the appendix.

5 Conclusion

This paper provides novel evidence from a field experiment, which suggests that young adults motivate their risk assessments in the presence of an incentive to engage in a hedonic yet risky activity. Exploiting the changed environmental conditions induced by the COVID-19 pandemic, which make it more dangerous to engage in a variety of social activities, I show that students who received a 10EUR gift card to visit a café i) visited cafés more often than students who received a 1.50EUR gift card and ii) strategically updated their assessment of risk associated with a café visit. While subjects in the LowIncentive treatment perceived an increase in risk over the two-week study period consistent with the time trend of increasing COVID-19 cases, subjects in the HighIncentive treatment reported a drop in perceived risk, which made a café visit appear more justifiable. For a majority of subjects in the HighIncentive treatment, this drop in perceived risk took place *prior* to the café visit and not after the visit. It happened in anticipation of the visit, at a time at which no treatment could have gained an information advantage from the experience of the visit. This finding is important because it implies that many subjects not only updated in the opposite direction than subjects in the control (LowIncentive) group, but also updated without an acquisition of new or changed information, inconsistent with the notion of Bayesian updating. By means of survey responses, I show that subjects neither actively collect additional information nor exhibit any endogenous behavior changes before the redemption of the gift card that would explain the downward updating of risk perceptions or its timing. The result thus suggests that the updating in the HighIncentive treatment is of strategic nature and happens in direct response to the incentive, with the motivation to justify a risky activity. Moreover, an exogenous provision of information does not alleviate this formation of motivated risk assessments or reduce the amount of café visits.

The evidence provided by this study implies that trusting individuals to responsibly assess the risk of a hazard even if information about the source of the danger is available can be a risky gamble. Exposed to a sufficiently large incentive, many people seem able to convince (or deceive) themselves that hedonic activities are harmless when, in fact, they have acknowledged earlier that those activities entail substantial risks both for themselves and for others. My data suggests that in particular the assessment of risk exposed on others seems easy to motivate, which is an important insight with respect to public goods policies. It suggests that individuals do not fail to account for the social dimension of their actions per se but situationally underestimate the repercussion of their behavior in their own favor.

My analysis also points out an important mechanism of motivated risk assessments that can be helpful in formulation of policy advice. The experimental results provide suggestive evidence that individuals conveniently misrecall previous risk assessments to convince themselves of their assessment updates. That is, they intend to maintain an image of consistency and pretend (or believe) that an updating of risk assessments never happened. Both in the LowIncentive and in the HighIncentive treatment, I observe recall errors consistent with the direction of the perception updating over the two-week study period. However, while in the LowIncentive treatment this may be a result of a slow and possibly unnoticed time trend of increasing

COVID-19 cases, the memory lapses in the HighIncentive treatment cannot be explained by changes in external circumstances. Rather, it appears likely that the misrecall in the HighIncentive treatment is a product of strategic ignorance that alleviates a cognitive dissonance. The mechanism of endogenous memory has previously been shown to play a crucial role for people to maintain a positive self-image and avert ego-threats (Zimmermann, 2020). This study extends the evidence by showing that the mechanism is similarly successful in dealing with obstructive past beliefs. Thus, rather than providing information about the source of the threat, a more promising strategy to alleviate situational, motivated risk assessments could be to stimulate a person's memory while stressing how the environmental conditions have changed over time. One could, for example, actively remind individuals of their past assessments.

Finally, my data suggests that subjects who report to be more pro-social tend to update their assessments more strongly and are more likely to visit a café. One the one hand, this result seems surprising because, initially, pro-social participants deem the activity as more risky than less pro-social students. On the other hand, considering the fact that a café visit is a social activity, pro-social students most likely obtain the greatest benefit from redeeming their gift card. Thus, the mental conflict between avoiding a risk and indulging in a hedonic activity may be particularly pronounced for those individuals. This finding highlights the importance of understanding the context of risk. It is crucial to identify vulnerable groups and eventually design effective policy interventions.

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Appendices

A Additional Figures and Tables

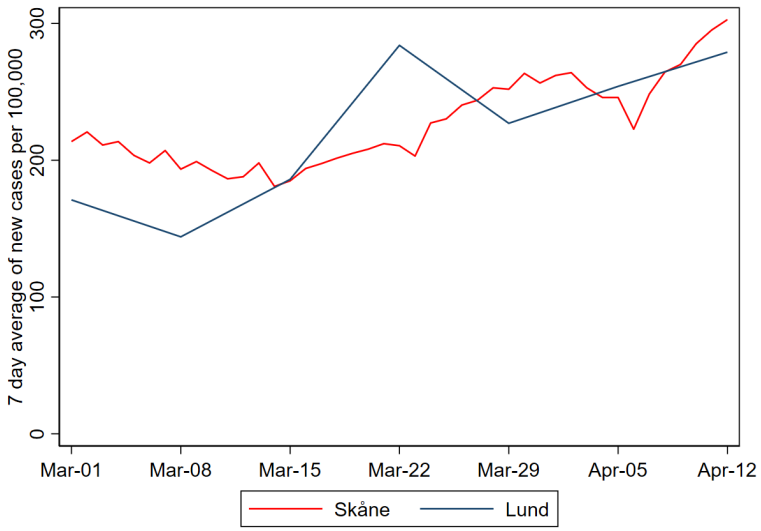


Figure A1: Trend of COVID-19 New Infections in Lund and Skåne

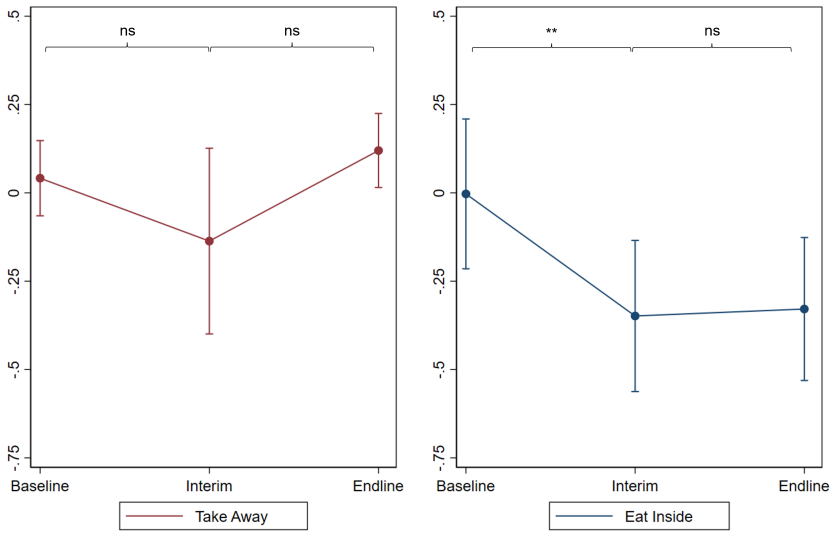
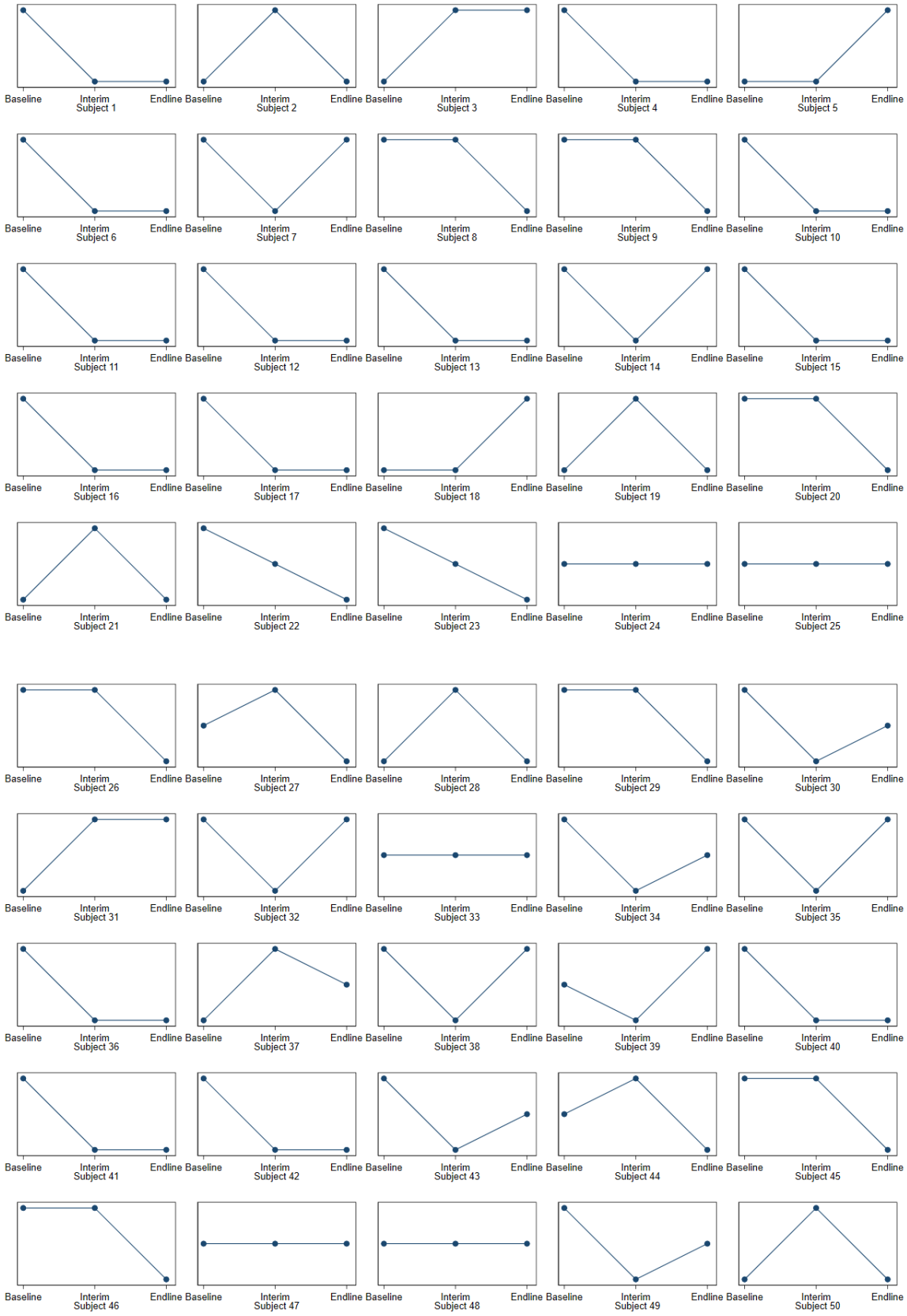


Figure A2: Timing of Updating for Subjects who Eat Inside and Order Take Away


Baseline
Interim
Endline
Subject 1
Subject 2
Subject 3
Subject 4
Subject 5
Subject 6
Subject 7
Subject 8
Subject 9
Subject 10
Subject 11
Subject 12
Subject 13
Subject 14
Subject 15
Subject 16
Subject 17
Subject 18
Subject 19
Subject 20
Subject 21
Subject 22
Subject 23
Subject 24
Subject 25
Subject 26
Subject 27
Subject 28
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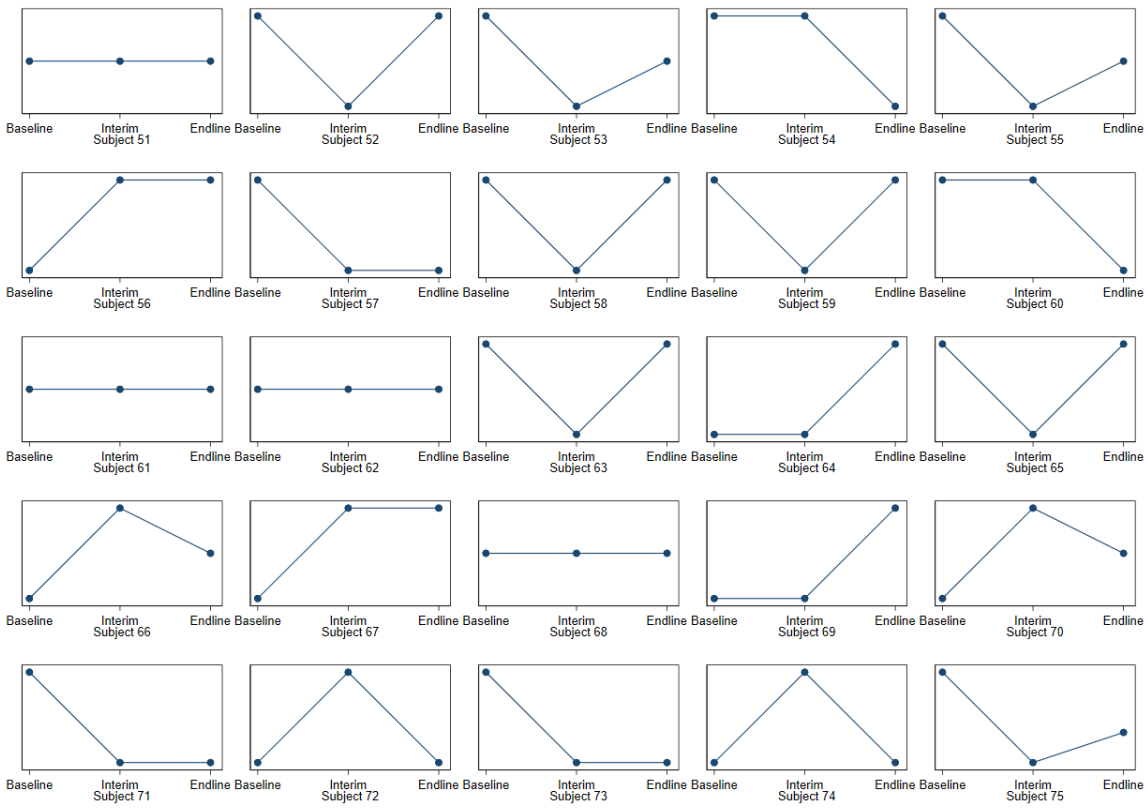

Figure A3: Heterogeneity in Dynamics of Risk Assessments (Subjects who Eat Inside)

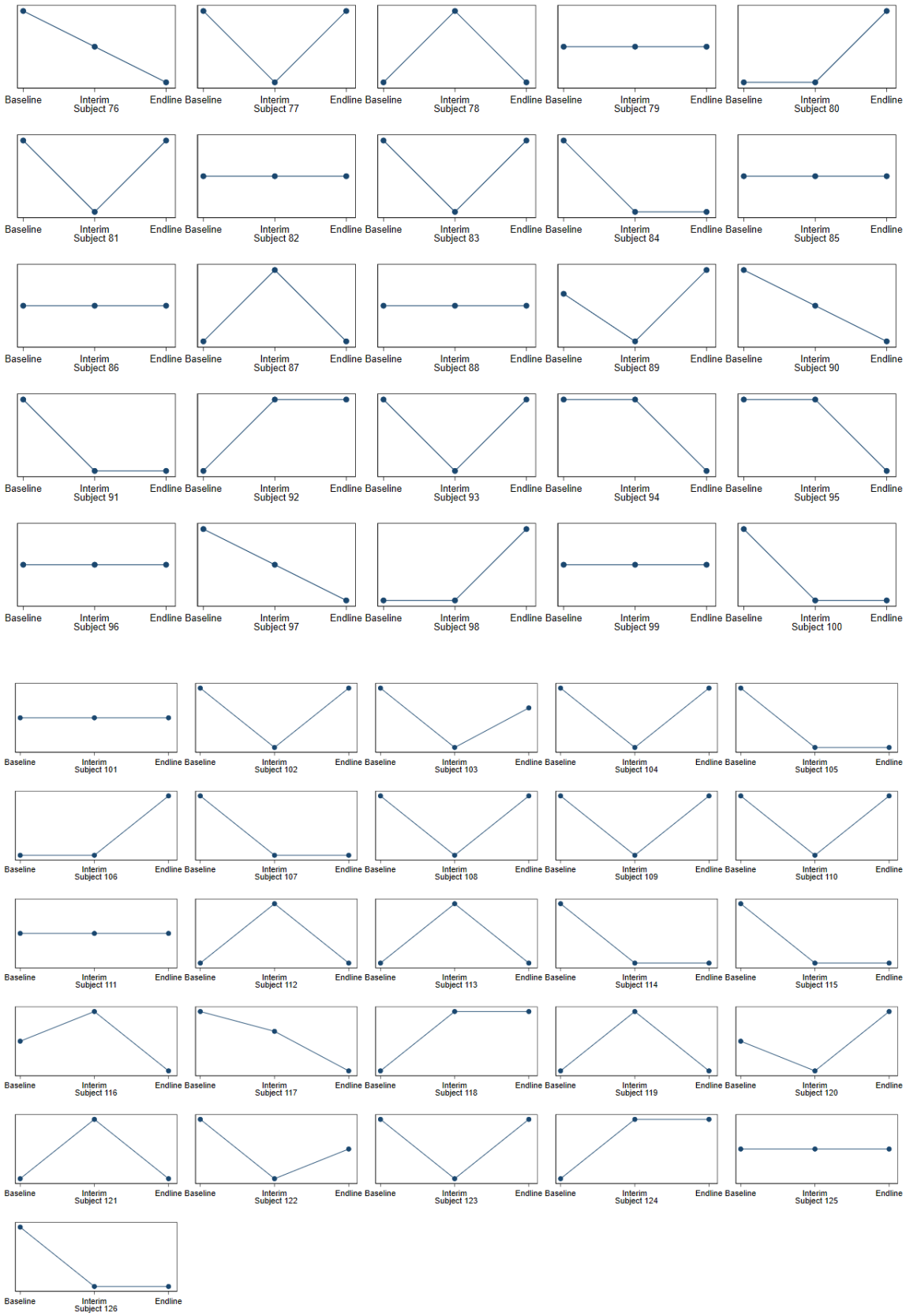

Figure A4: Heterogeneity in Dynamics of Risk Assessments (Subjects who Eat Outside)

Table A1: Survey Content

Survey	Who participates?	Elicitation of Risk Perceptions		Behavior	Socio-demographics	Preference elicitation	Norm elicitation	Memory task	Cognitive Reflection Test	Background information
		Non-incentivized	Incentivized							
Baseline	All subjects	✓	✓	✓	✓	✓				
Interim	Subjects who redeem gift card	✓								
Endline	All subjects	✓	✓	✓			✓	✓	✓	✓

Table A2: Summary Statistics by Treatment

	No Info - 1,50EUR Gift Card					No Info - 10EUR Gift Card				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Male	109	.51	.50	0	1	114	.53	.50	0	1
Age	109	22.62	2.45	19	30	114	22.24	2.31	19	30
Study Econ	109	.28	.45	0	1	114	.30	.45	0	1
Health	109	8.43	1.55	2	10	114	8.16	1.58	3	10
Patience	109	7.22	1.96	1	10	114	7.25	1.82	1	10
Altruism	109	6.29	2.11	1	10	114	6.32	2.27	1	10
Risk	109	5.39	2.11	1	10	114	5.65	1.79	1	10
Wear mask	109	1.37	.86	0	2	114	1.42	.82	0	2
Café visits before Baseline survey	109	1.72	2.11	0	10	114	1.99	2.34	0	12
	Info - 1,50EUR Gift Card					Info - 10EUR Gift Card				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Male	107	.56	.50	0	1	104	.47	.50	0	1
Age	107	22.37	2.40	19	30	104	22.25	2.14	19	29
Study Econ	107	.28	.45	0	1	104	.37	.48	0	1
Health	107	8.10	1.42	3	10	104	8.43	1.33	4	10
Patience	107	7.36	1.73	3	10	104	7.47	1.80	3	10
Altruism	107	6.64	1.77	2	10	104	6.44	2.19	1	10
Risk	107	5.37	1.88	1	10	104	5.42	1.92	1	10
Wear mask	107	1.36	.83	0	2	104	1.41	.82	0	2
Café visits before Baseline survey	107	1.55	1.85	0	10	104	1.56	1.87	0	10

Table A3: Regression Results - Café Visits (with Controls)

	Cafe Visit					
	Used gift card at specific café		Eat inside at specific café		Any café before endline survey	
	(1)	(2)	(3)	(4)	(5)	(6)
10EUR Gift Card	0.396***	0.461***	0.268***	0.306***	0.133***	0.145**
	(0.039)	(0.053)	(0.034)	(0.048)	(0.044)	(0.060)
Information	-0.020	0.048	-0.024	0.016	-0.020	-0.008
	(0.039)	(0.039)	(0.034)	(0.027)	(0.044)	(0.067)
Information × 10EUR		-0.134*		-0.080		-0.024
		(0.078)		(0.068)		(0.088)
Constant	0.101***	0.068***	0.050**	0.030	0.643***	0.637***
	(0.027)	(0.025)	(0.022)	(0.019)	(0.039)	(0.046)
Observations	434	434	434	434	434	434
R-squared	0.22	0.23	0.15	0.15	0.03	0.03
Controls	✓	✓	✓	✓	✓	✓

Notes: OLS regressions of café visits. Columns (1) and (2) show coefficient estimates for directly observable gift card data. The dependent variable is binary and indicates whether the gift card for the specific café I collaborated with was redeemed. Columns (3) and (4) show coefficient estimates for directly observable gift card data. The dependent variable is binary and indicates whether the gift card for the specific café I collaborated with was used to eat inside (as opposed to order take-away). Columns (5) and (6) show coefficients estimates for self-reported café visits. The dependent variable is binary and indicates whether any café was visited in the two weeks prior to the Endline survey. Robust standard errors are reported in parenthesis. Controls include age, gender, health status, results from the cognitive reflection test and preference measures. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Regression Results - Reported Number of Café Visits

	Number of café visits before endline survey (any café)			
	Full Sample		Restricted Sample	
	(1)	(2)	(3)	(4)
10EUR Gift Card	0.190	0.194	0.289**	0.295**
	(0.238)	(0.238)	(0.141)	(0.143)
Information	-0.332	-0.339	-0.111	-0.110
	(0.235)	(0.240)	(0.141)	(0.142)
Constant	1.845***	1.847***	1.387***	1.384***
	(0.254)	(0.257)	(0.120)	(0.121)
Observations	434	434	420	420
R-squared	0.01	0.02	0.01	0.02
Controls		✓		✓

Notes: OLS regressions for reported number of café visits at any cafe in the two weeks prior to the Endline survey (Self Reported Café Visits). Columns (1) and (2) show the results from the full sample. Columns (3) and (4) depict results from a restricted sample. The restricted sample excludes 14 subjects who reported 6 or more café visits over a two week period in part, as a result of their work at a café. Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Regression Results - Risk Assessment using Fixed Effects

	Non-Incentivized Perception			Incentivized Perception	
	Total Risk	Risk for Self	Risk for Others	Share of New Infections	
	(1)	(2)	(3)	(4)	(5)
Endline	0.130*	0.137**	0.155**	-1.912	-0.636
	(0.073)	(0.064)	(0.073)	(1.292)	(1.082)
Endline × 10EUR	-0.242**	-0.099	-0.282***	-3.258*	-3.021*
	(0.102)	(0.096)	(0.106)	(1.920)	(1.566)
Constant	0.034	-0.036	0.034	21.806***	17.949***
	(0.025)	(0.024)	(0.027)	(0.480)	(0.391)
Observations	868	868	868	868	742
R-squared	0.86	0.88	0.85	0.76	0.76
Individual FE	✓	✓	✓	✓	✓

Notes: OLS regressions for non-incentivized and incentivized measures of risk perceptions. Columns (1) to (3) show the results for the three non-incentivized measures Total Risk, Risk for Self and Risk for Others. The dependent variables are standardized (z-scores). Column (4) and (5) show the results for the incentivized measure of perceived risk. The dependent variable captures the expected share of new infections, which is due café and restaurant visits. Column (4) presents results of the entire panel. Column (5) presents results of a reduced panel. In the reduced panel, subjects who reported a share greater than 50% either for café visits or gym visits were excluded. Standard errors are clustered on the individual level. Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Perceived Risk for Self and Others

	Risk for Self				Risk for Others			
	Baseline		Endline		Baseline		Endline	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
10EUR Gift Card	-0.033	-0.030	-0.132	-0.130	-0.037	-0.055	-0.320***	-0.334***
	(0.098)	(0.096)	(0.094)	(0.093)	(0.096)	(0.094)	(0.094)	(0.092)
Information	0.223**	0.220**	0.213**	0.211**	0.232**	0.226**	0.132	0.128
	(0.099)	(0.097)	(0.094)	(0.093)	(0.096)	(0.095)	(0.094)	(0.093)
Constant	-0.128	-0.128	0.015	0.015	-0.060	-0.048	0.145*	0.154*
	(0.085)	(0.082)	(0.082)	(0.082)	(0.084)	(0.082)	(0.083)	(0.081)
Observations	434	434	434	434	434	434	434	434
R-squared	0.01	0.07	0.02	0.07	0.01	0.06	0.03	0.08
Controls		✓		✓		✓		✓

Notes: OLS regressions forRisk for Self and Risk for Others. Columns (1) to (2) and (5) to (6) show the results using data from the Baseline survey. Columns (3) to (4) and (7) to (8) present results from the Endline survey. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Effect of Risk Perception on Behavior

	Self-reported café visit before endline survey (any café)								Eat inside specific café	
	Gift card value									
	1.50EUR	10EUR	1.50EUR/10EUR	1.50EUR	10EUR	1.50EUR/10EUR	1.50EUR/10EUR		1.50EUR/10EUR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Risk for Self (Lag)	-0.117***	-0.063**	-0.117***				-0.070**	-0.075*	-0.056**	-0.021
	(0.031)	(0.030)	(0.031)				(0.030)	(0.045)	(0.024)	(0.017)
Risk for Self (Lag) × 10EUR			0.054					0.011		-0.068
			(0.043)					(0.060)		(0.043)
Risk for Others (Lag)				-0.115***	-0.041	-0.115***	-0.031	-0.064	0.032	0.018
				(0.032)	(0.032)	(0.032)	(0.031)	(0.046)	(0.026)	(0.023)
Risk for Others (Lag) × 10EUR						0.074		0.064		0.032
						(0.045)		(0.062)		(0.048)
Constant	0.636***	0.765***	0.636***	0.637***	0.765***	0.637***	0.637***	0.636***	0.173***	0.037***
	(0.032)	(0.029)	(0.032)	(0.032)	(0.029)	(0.032)	(0.038)	(0.038)	(0.018)	(0.013)
Observations	216	218	434	216	218	434	434	434	434	434
R-squared	0.06	0.02	0.06	0.06	0.01	0.06	0.06	0.07	0.01	0.14

Notes: OLS regressions for café visits before the Endline survey. The independent variables are Risk for Self and Risk for Others elicited in the course of the Baseline survey. In columns (1) to (8) the dependent variable is the self-reported measure of whether any café was visited in the two weeks prior to the Endline survey. Columns (1) and (4) show results for subjects who received the 1.50EUR gift card. Columns (2) and (5) show the results for subjects who received the 10EUR gift card. Columns (3) and (6) pool both incentive treatments. Columns (9) and (10) show the result for subjects who used their gift card to sit inside the specific café. Note that among the subjects who used their gift card to sit inside the café the vast majority had a 10EUR gift card. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Alternative Updating Explanations

	Additional Info	News Consumption	Communication
	(1)	(2)	(3)
10EUR Gift Card	0.037	-0.010	0.009
	(0.031)	(0.847)	(0.025)
Information	0.062**	-1.110	0.050**
	(0.031)	(0.847)	(0.025)
Constant	0.066**	7.915***	0.044**
	(0.026)	(0.732)	(0.022)
Observations	434	434	434
R-squared	0.01	0.00	0.01

Notes: The table shows the results of 3 OLS regressions. Column (1) shows the effects of the *Gift Card* and the INFORMATION treatments on subjects to collect additional information about COVID-19. The dependent variable is binary and indicates whether a subject actively searched for more information (e.g. the infection rate in cafés). Column (2) reports the treatment effect on news consumption (i.e. how often a subject consumed news during the two weeks prior to the Endline survey). Column (3) shows the treatment effects on communication among study participants before the Endline survey. The dependent variable is binary. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Spillover Effects

	Perceived Risk Associated with Activity							
	Gym	Meet Indoors	Meet Outdoors	Publ. Transport	Supermarket	Sport Event	Travelling	Uni Lecture
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Information	0.171*	0.241***	0.149*	0.176**	0.213**	0.161*	0.226**	0.147*
	(0.091)	(0.087)	(0.086)	(0.088)	(0.088)	(0.088)	(0.088)	(0.089)
10EUR Gift Card	0.022	-0.051	-0.062	-0.035	0.042	0.046	0.066	-0.054
	(0.098)	(0.097)	(0.094)	(0.097)	(0.099)	(0.095)	(0.097)	(0.097)
Endline × 10EUR	-0.152**	-0.127*	0.008	0.015	-0.031	-0.106	-0.181**	-0.082
	(0.062)	(0.077)	(0.086)	(0.078)	(0.076)	(0.073)	(0.073)	(0.069)
Constant	-0.069	-0.065	-0.066	-0.042	-0.115	-0.011	-0.096	0.006
	(0.082)	(0.082)	(0.083)	(0.082)	(0.081)	(0.080)	(0.081)	(0.085)
Observations	868	868	868	868	868	868	868	868
R-squared	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.01

Notes: OLS regression results. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Romano-Wolf corrected p-values for Spillover Effects

	Endline x 10EUR		Information	
	Model p-value	Romano-Wolf p-value	Model p-value	Romano-Wolf p-value
Gym	.0146	.0865	.0600	.1898
Meet Indoors	.0990	.4313	.0060	.0460
Meet Outdoor	.9292	.9760	.0832	.1898
Publ. Transport	.8460	.9760	.0454	.1758
Supermarket	.6770	.9600	.0161	.0759
Sport Event	.1470	.5097	.0693	.1898
Travelling	.0137	.0865	.0106	.0639
Uni Lecture	.2383	.6457	.0995	.1898

Notes: The table presents Romano-Wolf corrected values for the independent variables *Survey 2* × *10EUR* and Information of the OLS regressions presented in table A9.

Table A11: Spillover Effects Robustness

	Perceived Risk of Gym Visit		Self-Reported Gym Visits	
	(1)	(2)	(3)	(4)
Information	-0.157	-0.392	-0.032	-0.033
	(1.265)	(1.221)	(0.044)	(0.043)
10EUR Gift Card	1.919	2.080	0.000	0.001
	(1.468)	(1.433)	(0.047)	(0.047)
Endline × 10EUR	-3.715***	-3.715***	-0.014	-0.014
	(1.388)	(1.393)	(0.031)	(0.031)
Constant	18.573***	18.607***	0.405***	0.405***
	(1.189)	(1.177)	(0.039)	(0.039)
Observations	868	868	868	868
R-squared	0.01	0.06	0.00	0.05
Controls		✓		✓

Notes: The table shows the results of OLS regressions for alternative indicators for the risk of visiting a gym. Columns (1) and (2) depict the results for an incentivized measure of perceived risk - the expected share of COVID-19 new infections that are due to gm visits. Columns (3) and (4) show the results for the self-reported measure of gym visits. The dependent variable in columns (3) and (4) is binary and indicates whether a gym was visited during the period 2 weeks prior to the respective survey. All regressions exploit data from the Baseline and Endline survey. Standard errors are clustered on the individual level. Controls include age, gender, health status and results from the cognitive reflection test. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Preferences

	Total Risk	Risk for Others	Eat Inside	Norm Perception
	(1)	(2)	(3)	(4)
Altruism	0.136***	0.124***	0.042**	0.060*
	(0.033)	(0.033)	(0.018)	(0.032)
Risk-Seeking	-0.262***	-0.260***	-0.027	0.048
	(0.033)	(0.033)	(0.018)	(0.031)
Patience	0.158***	0.159***	0.011	-0.023
	(0.033)	(0.033)	(0.018)	(0.028)
Constant	0.043	0.046	0.174***	2.436***
	(0.032)	(0.032)	(0.018)	(0.029)
Observations	868	868	434	434
R-squared	0.10	0.10	0.02	0.02

Notes: OLS regression results. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B Surveys

B.1 Baseline Survey

Welcome to our study and thank you for participating!

Background

I am a researcher from Lund University conducting a research study about COVID-19. By participating in this study you contribute to the important research in this area. As you know, the COVID-19 pandemic is currently threatening millions of people around the world. For that reason, research that allows us to understand how people behave during this pandemic is essential. I therefore like to ask you to take this study seriously and give truthful answers.

The Study

This study is targeted at students who currently live in Lund. **Please do not participate if you will not be in Lund for the next 2 weeks.**

The study will consist of two parts. Part 1 will take place today. You will be asked to read a brief information note about COVID-19 and then participate in a survey that will last around 10-15 minutes. Upon completion of the first part, you will receive a compensation of 50kr. The second part of this study will take place in 15 days. It will consist of a second survey, which will also be about 10-15 minutes long. For the second survey, you will receive a compensation of 100kr. During both surveys you will also have the chance to earn additional money. At the end of the survey today you will be asked to state your preferred payment method. You can choose between bank transfer and Swish.

You will receive a reminder to participate in survey 2. However, if you already know that you will not be able to participate in both surveys, please do not participate today.

Management of Data and Confidentiality

Both surveys will collect data about your choices but all information will be confidential and anonymous. While the results of this study will be presented in a research paper, I will only report general, descriptive data. None of your choices will be linked to your personal information, which means that the reported data cannot be traced back to you as an individual. Lastly, all responses will be protected so that unauthorized persons will not be able to access them.

Participation

Your participation in this study is voluntary and you can choose to cancel the participation at any time by pressing a button that cancels the questionnaire. If you choose not to participate or want to cancel your participation, you do not need to state why.

No special knowledge is required for the two parts of this study. I am mostly interested in your personal opinions and judgments. However, please do not participate in this study if you are currently infected with COVID-19, if you have been infected previously or if you are part of the COVID-19 risk group.

Responsible Researcher

Marco Islam
PhD Student
marco.islam@nek.lu.se
Department of Economics
Lund University, Sweden

☐ I am not infected with COVID-19 or have been infected previously.

☐ I am not part of the COVID-19 risk group.

☐ I commit to participate in both parts of the study.

Continue

Information about COVID-19

On this page, I would like to provide you with some information about the danger of COVID-19 for people in your age group. Even though you may have heard about some of the information before, I would like to ask you to take some time and read this page carefully. At the end of the page, you will have to answer two questions in order to proceed. Thanks for taking the time!

Health effects for young adults

1. Even among young adults without underlying chronic medical conditions, COVID-19 can result in prolonged illness: Among young adults infected with COVID-19, 35% had not returned to their usual state of health 2–3 weeks after detecting the virus. (Source)
2. A study from the US reveals an association between COVID-19 and an increased risk for a stroke for young populations without a severe risk for a stroke. Compared to the seasonal influenca, the chance of experiencing a stroke increases by factor 7.6. (Source)
3. The WHO reports that COVID-19 increases the risk of heart failure and damage to lung tissue. Moreover, it may affect a person's mental health as COVID-19 can cause anxieties and depressions. (Source)

Young adults and their impact on others

1. A study from the Stockholm Region has shown that in the early phase of COVID-19 (March-June) disproportionally many older people were infected who lived in areas with young people. (Source)
2. Young adults seem to have a longer incubation time (8 days) than middle-aged or elderly patients, which means they can infect others over a longer time period. (Source)
3. On average, young adults infect 50% of their family members within 1.4 days. (Source)
4. Different sources from the US report that increases in COVID-19 cases among young adults are most likely to affect people aged >60 with a delay. This delay is estimated to be around 14 days. (Source1, Source2)

☑ I have read the information and would now like to answer the two questions.

1. By which factor does the chance of receiving a stroke increase after being infected with COVID-19 compared to the seasonal influenca?

2. How many days does it take approximately (in the US) until the virus passes from young adults to people who are older than 60 years?

Continue

Page 1

Please answer the following questions.

How dangerous do you think is COVID-19 for you personally?

1 - Not at all dangerous

How dangerous do you think is COVID-19 for the people you interact with regularly (e.g. friends, family or colleagues)?

4

How dangerous do you think is COVID-19 for a person in the age group 18 to 40?

2

How dangerous do you think is COVID-19 for a person who is 65 years or older?

7 - Very dangerous

How dangerous do you think is COVID-19 for a person who is part of the risk group? (People in the risk group are for example people who are older than 65, people who have a weak immune system or people with a long-term medical condition):

7 - Very dangerous

How many people you interact with regularly (e.g. friends, family or colleagues) are part of the COVID-19 risk group?

10

How likely do you think is it that you would catch COVID-19 if a person you interact with (e.g. friends, family or colleagues) was infected?

81%-90%

How many non-infected people do you think will catch the virus from you, if you were infected?

20

Next

Page 2

The following questions revolve around the risks of visiting a café or a restaurant in times of COVID-19. With café or restaurant visits, we mean classic "in-house visits" where you sit down at a table to eat your food or drink your drinks. We do not mean short visits to pick up food or drinks, which are then consumed outside of the cafe or the restaurant.

If you visited a cafe or restaurant in Lund today, how worried would you be about your own health?

3

If you visited a cafe or restaurant in Lund today, how worried would you be that you could infect other guests or personnel with COVID-19?

5

How likely do you think is it that during your visit of the cafe or restaurant at least one other guest would be part of the COVID-19 risk group?

21%-30%

If you visited a café or restaurant in Lund today, how worried would you be that you could infect yourself during the visit and then pass the virus on to other people you interact with (e.g. friends, family or colleagues)?

7 - Very worried

Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to visit a café or restaurant?

6

Next

Page 3

Considering the risk for yourself and the risk you impose on others (both during and after the activity), how dangerous do you think is it currently ...

... to go to the gym?

6

... to use means of public transportation?

4

... to meet 5 or more people who do not live with you indoors?

5

... to meet 5 or more people who do not live with you outdoors?

2

... to go to the supermarket?

3

... to go to a concert or a sport event (assuming it is allowed to do so)?

5

... to travel by plane or train?

5

... to attend a university lecture?

5

Next

Page 4

Time left to complete this page: 1:22

The following four questions allow you do earn an extra payment of up to 500 kr. You have exactly 120 seconds to answer them. At the end of the study, we will draw one question and select 1 participant at random to win the payment. If you are chosen for payment, we will evaluate how close your answer for the selected question is to the correct answer. The closer it is to the correct answer, the more money you will win. The table below details your payments in this task correspond with the accuracy of your answer.

	Payments according to the deviation of your answer and the correct answer					
Deviation	0% Your answer exactly matches the correct answer	+/− 5%	+/− 10%	+/− 15%	+/− 20%	> 20%
Payment	500 SEK	475 SEK	400 SEK	275 SEK	100 SEK	0 SEK

Please answer the following four questions:

What is the percentage share of new infections that is due to gym visits? (Please state a number between 0 and 100):

5

What is the percentage share of new infections that is due to café and restaurant visits? (Please state a number between 0 and 100):

2

How many people were registered as newly infected with COVID-19 in Skåne yesterday?

53

On average, how many people did one contagious person in Sweden infect yesterday?

1.1

Next

Page 5

How many times have you visited a café or restaurant during the last 2 weeks?

1

How many times have you gone to the gym during the last 2 weeks?

0

How many rides in means of public transportation have you made during the last 2 weeks?

4

How many times have you followed news about COVID-19 in the media during the last 2 weeks?

5

Next

Page 6

How many people you interact with regularly (e.g. friends, family or colleagues) are or have been infected with COVID-19?

3

Do you think it should be enforced to wear a face mask in public buildings or means of public transportation?

Yes

Do you wear a face mask in public spaces?

Sometimes

Next

Page 7

How old are you in years?

24

What is your highest academic degree (e.g. Bachelor)?

Master

How many persons live in your household?

2

How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future?

9

In general, how willing are you to take risks?

6

How willing are you to give to good causes without expecting anything in return?

9

In your opinion, how is your health condition?

10 - very good

Next

Thank you! You have now completed the first survey!

This survey has been conducted in collaboration with the café Incognito, which is located in Lund, Lilla Fiskaregatan 23. Among all participants, some have been randomly selected to receive a 100kr gift card in addition to their guaranteed payments for participating in the surveys. You are one of the lucky persons! During the next 24 hours, you will receive an email, with a link that allows you to activate the gift card. The gift card is valid for 14 days and is not transferable to another person. Additional information about the conditions to use the gift card can be found in the mail.

As promised, you will also receive your main compensation of 50kr for your participation. You can choose whether you want to receive this payment by Swish or by ordinary bank transfer. Please fill in the necessary information below so that we can initiate the payment as soon as possible.

Remember: The second survey will take place in 15 days. You will receive a reminder by email one day before. Please also check your spam folder. It is very important that you are able to participate.
For the second survey, you will receive a compensation of 100kr. All potential bonus payments will be determined after the second survey. Note however that you are only eligible to receive those payments if you participate in both surveys.

Payment Information

Which payment method do you prefer?

- ○ Bank Transfer
- ◉ Swish

Telephone number:

123456789

Continue

B.2 Gift Card

In order to activate your gift card, you will have to enter your participation ID. You will find your ID in the e-mail, which included the link to this gift card gift card.
Important: Once you activate the gift card, it will only be valid for 60 minutes, so please do not activate it before you really want to use it.

Participation ID:

I want to activate my gift card now

Your gift card has been successfully activated! Before it will be displayed, however, we would kindly like to ask you to answer the three questions below.

The following 3 questions revolve around the risks of visiting a café or a restaurant in times of COVID-19. With café or restaurant visits, we mean classic "in-house visits" where you sit down at a table to eat your food or drink your drinks. We do not mean short visits to pick up food or drinks, which are then consumed outside of the cafe or the restaurant.

1. How worried are you about your own health when you visit a café or restaurant?

----

2. How worried are you that you could infect yourself during the café visit and then pass the virus on to other people you interact with (e.g. friends, family or colleagues)?

----

3. Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to visit a café or restaurant??

Display the gift card

Your gift card is now valid!
Please show it to the personnel together with your ID.

Name: John Doe
Value: SEK 100
Expiration Date: 05.04.2021-18:00
Participation code: H18UfV

B.3 Endline Survey

Welcome to the second survey of our study and thanks for participating again! Today's survey will take about 10-15minutes. For its completion you will receive a compensation of 100kr. Before you start to fill out or second survey, please answer the following question:

Are you currently infected with COVID-19 or have you been infected previously?

○ Yes ○ No

Start

Page 1

The following questions revolve around the risks of visiting a café or a restaurant in times of COVID-19. With café or restaurant visits, we mean classic "in-house visits" where you sit down at a table to eat your food or drink your drinks. We do not mean short visits to pick up food or drinks, which are then consumed outside of the cafe or the restaurant.

If you visited a cafe or restaurant in Lund today, how worried would you be about your own health?

1 - Not at all worried

If you visited a cafe or restaurant in Lund today, how worried would you be that you could infect other guests or personnel with COVID-19?

1 - Not at all worried

How likely do you think is it that during your visit of the cafe or restaurant at least one other guest would be part of the COVID-19 risk group?

0%-10%

If you visited a café or restaurant in Lund today, how worried would you be that you could infect yourself during the visit and then pass the virus on to other people you interact with (e.g. friends, family or colleagues)?

1 - Not at all worried

Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to visit a café or restaurant?

1 - Not at all dangerous

Next

Page 2

Considering the risk for yourself and the risk you impose on others (both during and after the activity), how dangerous do you think is it currently ...

... to go to the gym?

2

... to use means of public transportation?

4

... to meet 5 or more people who do not live with you indoors?

4

... to meet 5 or more people who do not live with you outdoors?

3

... to go to the supermarket?

4

... to go to a concert or a sport event (assuming it is allowed to do so)?

5

... to travel by plane or train?

5

... to attend a university lecture?

5

Next

Page 3

Now we would like to know how *socially appropriate* you think other students find it to behave in certain ways.

Every morning, we ask one random student who does not participate in this study how *socially appropriate* he/she thinks it is to engage in the activities listed below. It is your task to guess the answer of the random student we asked today.

Your response on this page allows you to earn additional 500kr. At the end of the study we will select one of your four answers on this page at random and verify if the selected answer matches with the answer of the random student. If your answer matches with his/her answer, you will enter a pool of participants who are eligible for the extra payment. Of all eligible participants, we will select 1 participant at random at the end of the study.

Note that in this task it is important for you to imagine what other people think is socially appropriate behavior. This can but does not have to be the same behavior that you deem appropriate.

How *socially appropriate* does the randomly chosen student think is it currently ...

.. to visit a café in Lund?

... to go to the gym?

... to meet 5 or more people who do not live with you indoors?

... to engage in risky activities if those support local businesses (e.g. cafés, boutiques or bookstores)?

Next

Page 4

Time left to complete this page: 1:10

The following four questions allow you do earn an extra payment of up to 500 kr. You have exactly 120 seconds to answer them. At the end of the study, we will draw one question and select 1 participant at random to win the payment. If you are chosen for payment, we will evaluate how close your answer for the selected question is to the correct answer. The closer it is to the correct answer, the more money you will win. The table below details your payments in this task correspond with the accuracy of your answer.

	Payments according to the deviation of your answer and the correct answer					
Deviation	0% Your answer exactly matches the correct answer	+/− 5%	+/− 10%	+/− 15%	+/− 20%	> 20%
Payment	500 SEK	475 SEK	400 SEK	275 SEK	100 SEK	0 SEK

Please answer the following four questions:

What is the percentage share of new infections that is due to gym visits? (Please state a number between 0 and 100):

4

What is the percentage share of new infections that is due to café and restaurant visits? (Please state a number between 0 and 100):

1

How many people were registered as newly infected with COVID-19 in Skåne yesterday?

48

On average, how many people did one contagious person in Sweden infect yesterday?

0.9

Next

Page 5

How many times have you visited a café or restaurant during the last 2 weeks?

2

How many times have you been to the gym during the last 2 weeks?

0

How many rides in means of public transportation have you made during the last 2 weeks?

6

How many times have you followed news about COVID-19 in the media during the last 2 weeks?

6

Next

Page 6

On this page, we would like to show you 7 question, which we have asked you in survey 1 already. We would like to understand how well you can remember the answers you gave in survey 1. Please think about how you answered the 7 questions two weeks ago.

Your answers on this page allow you to earn additional 500kr. At the end of the study we will select one of your 7 answers on this page at random. We will then verify if the selected answer matches with your answer from survey 1. If your answer matches with your answer from survey 1, you will enter a pool of participants who are eligible for the extra payment. Of all eligible participants, we will select 1 participant at random at the end of the study.

If you visited a café or restaurant in Lund today, how worried would you be about your own health?

3

If you visited a café or restaurant in Lund today, how worried would you be that you could infect other guests or personnel with COVID-19?

3

How likely do you think is it that during your visit of the café or the restaurant at least one other guest would be part of the COVID-19 risk group?

11%-20%

If you visited a café or restaurant in Lund today, how worried would you be that you could infect other people you interact with (e.g. friends, family or colleagues) after your visit?

5

Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to visit a café or restaurant?

6

Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to go to the gym?

6

Considering the risk for yourself and the risk you impose on others (both during and after your visit), how dangerous do you think is it currently to use means of public transportation?

6

Next

Page 7

Please answer the following three questions.

A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball.How much does the ball cost (in cents)?

If it takes 5 machines 5 minutes to make 5 widgets, how many minutes would it take 100 machines to make 100 widgets?

In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake,how many days would it take for the patch to cover half of the lake?

Next

Page 8

Please answer the following questions.

Before you participated in the two surveys of this study, did you talk to other participants about them?

During the two weeks in between the two surveys, did you actively search for additional information about COVID-19 (for example, information about the infection rate at cafes or gyms)?
If so, please specify the information you collected.

Please guess what the two surveys intend to study:

Next

B.4 Participation Mail

Subject: COVID-19 Survey Study

Dear [Name],

Some weeks ago, you registered to participate in a survey study, which seeks to study how students perceive the threat of COVID-19 and how the pandemic affects their lives. Now, I would kindly like to invite you to participate in this study. Your participation involves filling out two surveys. The first survey can be accessed by clicking on the link below. The second survey will take place 15 days after you completed the first. For your participation in the two surveys, you are guaranteed to receive a compensation of 150kr. However, you can also earn significantly more money depending on your answers and a bit of luck.

You can participate by using a computer, smartphone or tablet. All your answers in the surveys will be anonymous. All data will be treated in accordance with the general data protection regulations (GDPR) of the EU and will only be used for research purposes. Your participation is entirely voluntary and is highly appreciated.

For any questions, please contact me at marco.islam@nek.lu.se or by responding to this e-mail.

Thank you very much for supporting my research!
Marco

Your participation ID: XXXXX
Link to Survey 1: https://covsurv1.herokuapp.com/room/COVID/

B.5 Gift Card Mail

Subject: COVID-19 Survey Study - Café Gift Card

Hej XXX

Thank you for participating in the first survey. As promised at the end of the survey, I would like to send you your digital gift card for café [name of café] in Lund. Your gift card has a value of 100 SEK. Before you activate it, please read the following information carefully.

Terms

To redeem and use your gift card, you need to activate it through a phone or tablet until [Date two weeks after Baseline Survey]. Please note that once you activate the gift card, you must redeem and use it within 60 minutes. You can activate it by clicking on the link on the bottom of this e-mail and entering your participation ID. Make sure not to activate your gift card before you really want to use it.

Your gift card is personalized. This implies that only you can use it. You are not allowed to give it to another person. When you want to redeem it, please show the activated gift card on your phone or tablet together with an ID to any staff member of the café. You do not need to print it.

Due to the current circumstances, please do not visit the café if you experience any cold symptoms. I would also like to ask you not to visit the café with more than one other person.

About café [name of café]

The café is located at [address of café]. It is open on weekdays from 11:00 – 18:00 and on Saturdays from 11:00 – 17:00. You can find more information about the café here: [link to webpage of café]

Participation ID and Activation Link

Participation ID: XXXXX

Activation Link: https://covsurvgift.herokuapp.com/InitializeParticipant/ecrzldjp

For any questions, please contact me at marco.islam@nek.lu.se or by responding to this e-mail.

Kind regards,

Marco